

# Sustainable Development Is Security: The Role of Transboundary River Agreements as a Confidence Building Measure (CBM) in South Asia

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## I. INTRODUCTION

Over the last decade, scholars have closely examined the link between environmental change and conflict and security.<sup>1</sup> Severe deforestation, soil erosion, soil salinization and waterlogging, toxic contamination, drought and flooding, and air and water pollution are some of the environmental calamities that can increase international tension, and even lead to war. The opposite is

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1. See, e.g., CONFLICT AND THE ENVIRONMENT (Nils Petter Gleditsch ed., 1997); ECOVIOLENCE: LINKS AMONG ENVIRONMENT, POPULATION, AND SECURITY (Thomas Homer-Dixon & Jessica Blitt eds., 1998); THOMAS F. HOMER-DIXON, ENVIRONMENT, SCARCITY, AND VIOLENCE (1999); Gunther Baechler, *Why Environmental Transformation Causes Violence: A Synthesis*, ENVTL. CHANGE & SEC. PROJECT REPORT, 1998, at 24.

also true, but this approach has received scant attention. Environmental conservation and cooperation can have a reverse effect by generating greater security, reducing regional tension, and avoiding conflict.<sup>2</sup> Complementing the extensive research linking environmental degradation to military insecurity, this Article embraces a different model by maintaining that international agreements to protect the environment tend to build confidence and, thereby, strengthen regional security.

The hydrology and security politics of South Asia are dissected against the backdrop of two major transboundary rivers in the region. The two rivers—the Indus and the Ganges—are primary sources of freshwater for hundreds of millions of people living on the Indian subcontinent.<sup>3</sup> The human need for freshwater is overwhelming, constant, and immediate: it is the only scarce resource for which there is no substitute.<sup>4</sup> The lack of adequate freshwater is becoming a global calamity, and South Asia is among the most water-stressed regions on the planet. U.N. Secretary-General Kofi Annan reports that, “No single measure would do more to reduce disease and save lives in the developing world than bringing safe water and adequate sanitation to all.”<sup>5</sup>

This Article employs two case studies of transboundary rivers on the Indian subcontinent to demonstrate that international river agreements serve not only to protect the environment and promote sustainable development, but also affect security throughout the basin. Moreover, these agreements tend to stabilize and enhance security at the regional level. The security return generated is independent of the concrete ecological and economic benefits produced by such agreements. Familiar law and policy debates surrounding international river agreements are recast by introducing their function as a confidence building measure (CBM) in reducing tension and preventing war throughout the river basin.<sup>6</sup> The bilateral basin treaties governing the Indus

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2. For one study that does acknowledge a correlation between improving the environment and enhancing regional security, see Richard A. Matthew & Asif Zaidi, *People, Scarcity and Violence in Pakistan*, in *CONSERVING THE PEACE: RESOURCES, LIVELIHOODS AND SECURITY* 57, 62 (Richard Matthew et al. eds., 2002).

3. This study uses the terms “international river basin” and “international river watershed” interchangeably to mean the entire catchment and drainage basin of a river that is shared by two or more states. See generally James L. Wescoat, Jr., *Beyond the River Basin: The Changing Geography of International Water Problems and International Watercourse Law*, 3 *COLO. J. INT’L ENVTL. L. & POL’Y* 301, 301-32 (1992).

4. *WORLD COMM’N ON WATER FOR THE TWENTY-FIRST CENTURY, COMMISSION REPORT: WATER SECURE WORLD: VISION FOR WATER, LIFE, AND THE ENVIRONMENT* 3 (2000) [hereinafter *WATER SECURE WORLD*] (“Water is a fundamental need. All human beings, including the poor and marginalized, must have access to water.”). See also Aaron T. Wolf, *Indigenous Approaches to Water Conflict Negotiations and Implications for International Waters*, 5 *INT’L NEGOTIATION* 357, 358 (2000).

5. KOFI A. ANNAN, UNITED NATIONS, ‘WE THE PEOPLES’: THE ROLE OF THE UNITED NATIONS IN THE TWENTY-FIRST CENTURY 60 (2000), <http://www.un.org/millennium/sg/report/full.htm>. In recognition of the central importance of freshwater to the planet’s future, the UN General Assembly proclaimed 2003 the International Year of Freshwater. G.A. Res. 55/196, U.N. GAOR, 55th Sess., U.N. Doc. A/RES/55/196 (2001).

6. The term CBM was first used in the Organization for Security and Cooperation in Europe’s Basket I of the 1975 Helsinki Final Act where States agreed to certain measures designed to reduce the dangers of armed conflict and miscalculation or misunderstanding of military activities that could give rise to apprehension. Conference on Security and Cooperation in Europe, Final Act, Aug. 1, 1975, 14 *I.L.M.* 1292, 1293-99 (1975). This Article uses the traditional term “confidence building measure” (CBM) and the newer term “confidence and security building measure” (CSBM)

and Ganges Rivers in South Asia serve to illustrate how resource and environmental agreements between political and military rivals ameliorate tension, enhance stability, and decrease the chances of theater war.

The very process of reaching accommodation and developing bilateral resource and environmental mechanisms for cooperation creates a stabilizing and more transparent atmosphere. Negotiation widens political participation, builds political stability, and spreads confidence between the basin states. Unfortunately, scholars and policy-makers have been slow to recognize, or have entirely failed to appreciate, the functional utility of transboundary river agreements to build confidence between parties. These positive security effects have gone unrecognized, largely because the study of transboundary river agreements remains the domain of resource economists, water technicians and specialists, and environmental activists, lawyers, and scholars, rather than those with a focus on arms control, defense policy, and international security. This Article identifies and captures for closer analysis the security benefits of international river agreements, particularly as they apply in South Asia. South Asia consists of a politically volatile regional security equation percolating against the backdrop of a delicate and chronically stressed natural environment. India, Pakistan, Bangladesh, and the major rivers they share, present an ideal (although not exclusive) venue for this analysis.<sup>7</sup>

This study explores the call from the World Commission on Water for the twenty-first century:

Among the helpful ways of thinking about this problem is to note that issues of water quantity and the sharing of total resources can be a cause of competing claims and conflict. Thus, dealing with conflict avoidance and the possible use of ombudsman or a mediation panel should be considered in mature relationships between riparians—relationships that usually involve many other facets beyond water sharing. In limited relationships it may be necessary to conceive of confidence-building measures and postpone any firm decisions on the long-term issues until the relationship matures.<sup>8</sup>

In Part II, the Article discusses confidence building measures generally, defining what they are and explaining how they build confidence and reduce tension. Europe has had the most experience in developing and refining CBMs, and that is the point of departure for their review. CBMs entail creative methods of developing verification and assurance, and states' procedural compliance may be just as important as substantive compliance. These mechanisms will be found to be under-utilized in the context of environmental issues. Their enlargement and expansion to include transboundary river agreements will be developed in Part V.

Part III introduces the hydrology of the Indus and Ganges river systems of South Asia. The rivers Indus and Ganges, and their tributaries and streams, dominate the hydrological landscape, and are woven into the political fabric of

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synonymously.

7. The Jordan, Nile, Mekong, Syr Darya, Amazon, and Tigris-Euphrates river basins are among those deserving future inquiry.

8. WATER SECURE WORLD, *supra* note 4, at 30.

the Indian subcontinent. They directly affect, and even control, the lives of hundreds of millions of people.

Part IV turns toward the hallmark agreements of transboundary river cooperation in South Asia—the Indus Waters Treaty between India and Pakistan and the Bangladesh-India Treaty governing the flow of the river Ganges. The Indus Waters Agreement was signed in 1960 and has been a cornerstone of Indian-Pakistani diplomacy ever since. The Ganges Treaty of 1996 resolved long-standing disagreements.

Part V sets forth how transboundary river agreements serve as confidence building measures to reduce tension and prevent war, and offers specific examples of their success in South Asia. For instance, the success of the negotiations for the Indus Waters Treaty precipitated negotiations on the Siachen Glacier conflict that nearly ended the perennial war. Throughout two wars and numerous clashes and diplomatic crises between India and Pakistan, the continued functioning of the Indus Waters framework has been the sole reliable working bilateral relationship.

## II. CONFIDENCE BUILDING MEASURES

By exploring one significant component of classical arms control—confidence building measures—and fusing it with the concerns of transboundary river riparians within the context of South Asia, I suggest a new model that assists rivals in reducing regional tension and preventing the outbreak of war.<sup>9</sup> Enlarging the purpose of the agreement, riparians can thus extend the benefits of a treaty more broadly throughout their relationship. This helps to cement ties and build interdependence.

There is no single mold from which all CBMs are cut, and theories on their usefulness approach them from a number of vantage points: (1) they tend to restrain nations in exchange for restraint from other nations; (2) they encourage rational behavior by building certainty and dispelling uncertainty; (3) they buy time to prevent surprise; (4) they provide “rules of the road” for crisis management; (5) they provide assurances and reassurances by reflecting the belief that increasing familiarity at all levels makes conflict less likely; and (6) they diffuse coercion directed against member states.<sup>10</sup> CBMs may meet one, or all, of these criteria. More broadly, CBMs may be viewed as “arrangements designed to enhance such assurance of mind and belief in the trustworthiness of state and the facts they create.”<sup>11</sup>

9. This concept is independent from, but acknowledges the initial and valuable contribution of the “Fire and Water” Workshop of October 2001 in considering the relationship between the fields of arms control and water management. The “Fire and Water” workshop was hosted by the Pacific Institute for Studies in Development, Environment and Security, the Department of Geosciences of Oregon State University, and the Cooperative Monitoring Center (CMC) at Sandia National Laboratory. With support from the Carnegie Corporation of New York, the workshop participants contrasted the fields of arms control and transboundary water resources. For the workshop’s report, see Elizabeth L. Chalecki et al., *Fire & Water: An Examination of the Technologies, Institutions, and Social Issues in Arms Control and Transboundary Water Resources Agreements*, ENVTL. CHANGE & SEC. PROJECT REP., 2002, at 125 (on file with author).

10. Ronald F. Lehman II, *Measures To Reduce Tension and Prevent War*, in NATIONAL SECURITY LAW 641, 642-45 (John Norton Moore et al. eds., 1990).

11. Johan Jorgan Holst, *Confidence-Building Measures: A Conceptual Framework*, 25

There is no universally accepted definition of a CBM; the term constitutes a basket of concepts rather than a discrete tool. CBMs generally may be regarded as measures designed to enhance mutual knowledge and understanding in order to reduce security tensions.<sup>12</sup> The Henry L. Stimson Center, which has been studying worldwide application of CBMs for over a decade, defines them as “diverse national security tools, such as hot lines, people-to-people exchange, prior notification of exercises and cross-border economic projects that can help defuse tension, resolve misunderstanding, and promote cooperation to address security concerns.”<sup>13</sup> They are intended to anticipate and dampen potential crises before they cross the threshold Rubicon to war. Long a feature of the superpower relationship and the European security experience, the United Nations system has recently begun to emphasize preventive measures in circumstances outside great power relationships in order to calm simmering conflicts before they turn violent.<sup>14</sup> While there is considerable overlap among preventive measures, CBMs occupy a distinct class therein that work by distributing information among parties to a conflict. This distribution of knowledge brings transparency to an otherwise opaque relationship.

Other preventive measures include disaster relief, supervised self-determination, peacekeeping, good offices, peacemaking, promotion of human rights, and promotion of economic development, but at the heart of all CBMs is the introduction of mechanisms to eliminate the obscurity that fuels suspicion among rivals.<sup>15</sup> Lack of information about a rival’s intentions, motives, and future plans tends to generate the greatest amount of suspicion and mistrust. When foreign relations are evenly and liberally endowed with information among the concerned parties, the ensuing transparency tends to strengthen the relationship. This is true even if the parties still “agree to disagree” on the underlying substantive issues. Transparency builds confidence, and mutual confidence reduces tension. The concept of CBMs arose in Central Europe during the Cold War, where confidence building quietly but effectively transformed the bipolar relationship.

#### A. *The OSCE Experience*

Even before World War II, CBMs were closely associated with initiatives in diplomacy, defense policy, and international law, in the form of arms control. Sharing information and avoiding certain practices reduced the possibility of accidental war, miscalculation, or the failure of rapid communication, and increased stability in times of both normal circumstances

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SURVIVAL 2 (1983).

12. Lehman II, *supra* note 10, at 641.

13. Benjamin L. Self & Ranjeet K. Singh, *Introduction to INVESTIGATING CONFIDENCE BUILDING MEASURES IN THE ASIA-PACIFIC REGION*, at iv (Ranjeet K. Singh ed., Henry L. Stimson Center Report No. 28, 1999).

14. See *generally Report of the Secretary-General on the Work of the Organization*, U.N. GAOR, 50th Sess., Supp. No. 1, paras. 581-96, U.N. Doc. A/50/1 (1995).

15. See Lilly R. Sucharipa-Behrmann & Thomas M. Franck, *Preventive Measures*, 30 N.Y.U. J. INT’L L. & POL. 485, 486-92 (1998).

as well as crises.<sup>16</sup> After World War II, a whole class of CBMs emerged onto the political landscape of Central Europe in order to relax the superpower rivalry. As the Cold War matured, CBMs lay at the center of the U.S.-Soviet relationship. In 1981, Ronald Reagan called CBMs one of the most effective and important arms control objectives of the United States.<sup>17</sup> The Conference on Security and Cooperation in Europe (CSCE), which was initially little more than a "talk shop" mechanism for dialogue, grew out of the Helsinki Final Act of 1975. Twenty-five years later, CSCE has matured into an umbrella organization sponsoring such activities as the Organization for Security and Cooperation in Europe (OSCE). OSCE now has fifty-five member states, including Russia and the United States as full members, which makes it the largest regional security organization in the world.<sup>18</sup> The OSCE defines CBMs as "provisions for the exchange and verification of information regarding the participating States' armed forces and military activities, as well as certain mechanisms promoting co-operation among participating States with regard to military matters."<sup>19</sup> Examples of CBMs include:

- Annual exchange of military information
- Risk reduction measures (e.g., mechanisms for consultation and cooperation as regards unusual military activities)
- Provisions regarding military contacts and cooperation
- Prior notification of certain military activities
- Observation of certain military activities
- Exchange of annual calendars of military activities
- Constraining provisions on military activities
- Compliance and verification measures
- Networks of direct communications between the various capitals
- Annual implementation assessment meetings
- Global exchange of military information
- Stabilizing measures for localized crisis situations
- Principles governing arms transfers<sup>20</sup>

The aim of the OSCE measures was to "promote mutual trust and dispel concern about military activities by encouraging openness and transparency."<sup>21</sup> These programs accomplished this goal in both the conventional and nuclear sphere by distributing relevant military information throughout Central Europe.<sup>22</sup> The CBMs negotiated at Helsinki, however,

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16. U.S. DEP'T OF STATE, SECURITY AND ARMS CONTROL 75 (1984).

17. Ronald Reagan, U.S. Program for Peace and Arms Control, Speech to the National Press Club (Nov. 18, 1981), in U.S. DEP'T OF STATE, REALISM, STRENGTH, NEGOTIATION: KEY FOREIGN POLICY STATEMENTS OF THE REAGAN ADMINISTRATION 23-26 (1984).

18. ORGANIZATION FOR SECURITY AND CO-OPERATION IN EUROPE, OSCE HANDBOOK 169-70 (Walter Kemp et al. eds., 3d ed. 1999), <http://www.osce.org/publications/handbook/files/handbook.pdf> [hereinafter OSCE HANDBOOK].

19. *Id.* at 120.

20. *Id.*

21. *Id.*

22. The current provisions in Europe evolved from three separate and evolving regimes: The Helsinki Act (1975-1986), the Stockholm Document (1986-1990) and the Vienna Document (1990-

only covered territory extending 250 km into the Soviet Union.<sup>23</sup> The 1986 Stockholm Review Conference extended the notification requirements to incorporate smaller exercises and maneuvers, and imposed a notice requirement for the largest exercises.<sup>24</sup> Stockholm also permitted onsite observers and authorized challenge inspections in the event of a suspected breach of the agreement. For the first time ever, compulsory inspections were included in a verification regime. The Vienna Document regime,<sup>25</sup> which was negotiated in parallel with the Conventional Armed Forces Europe (CFE) negotiations, yielded the Vienna Document 1990 on CSBMs.<sup>26</sup> The document was updated and broadened in 1992 by introducing emergency meetings to clarify suspicious activities, installing computerized information-sharing networks, and concluding an agreement to hold annual implementation assessment meetings.<sup>27</sup>

The CBMs contained in the earlier OSCE agreements were extended by the United States and the Soviet Union late in the Cold War, culminating in the 1988 Intermediate Nuclear Forces Treaty (INF).<sup>28</sup> INF required, for the first time, extensive onsite inspection of the destruction of a whole class of theater-range nuclear weapons, including ballistic missiles, launchers, and facilities.<sup>29</sup> The INF Treaty also introduced the concept of challenge inspections—a tool that has since become a feature of multilateral agreements such as the Chemical Weapons Convention.<sup>30</sup>

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1999). A key provision of the 1975 Helsinki Final Act required advanced notice of large military maneuvers in Central Europe. See Conference on Security and Co-operation in Europe: Final Act, Aug. 1, 1975, 14 I.L.M. 1292, 1298 (1995).

23. *Conference on Disarmament in Europe*, DEP'T OF STATE BULL., Mar. 1984, at 43.

24. Document of the Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe, Sept. 19, 1986, entered into force Jan. 1, 1987, 26 I.L.M. 190 (1987).

25. The specific Vienna Documents for 1990, 1992, 1994, and 1999 are all available via the OSCE website. See <http://www.osce.org>.

26. Vienna Document 1990: Of the Negotiations on Confidence- and Security-Building Measures Convened in Accordance with the Relevant Provisions of the Concluding Document of the Vienna Meeting of the Conference on Security and Co-operation in Europe (Nov. 17, 1990), reprinted in SIPRI YEARBOOK 1991: WORLD ARMAMENTS AND DISARMAMENT 475 (Billie Bielcleus et al. eds., 1991).

27. The terms of these agreements were further strengthened by the results of the Forum for Security Cooperation (FSC), which produced the Vienna Document 1994. The 1994 agreement lowered the threshold for notification and advisement, and added provisions for military planning and extensive points of contact. Organization for Security and Cooperation in Europe, Budapest Summit Declaration on Genuine Partnership in a New Era, Dec. 6, 1994, 34 I.L.M. 764, 773-76 (1995). At the November 1999 summit in Istanbul, negotiators fashioned the Vienna Document 1999, which entered into force on January 1, 2000. The 1999 Document unified the earlier Vienna agreements, and added an additional chapter on regional measures. Organization for Security and Cooperation in Europe, Charter for European Security, Nov. 19, 1999, 39 I.L.M. 255, 266-67 (2000). The new chapter encouraged states to seek additional politically or legally binding bilateral and multilateral measures within the spirit of the Vienna Document as a complement to the primary regime. The additional chapter also sought to extend the benefits of transparency and confidence enshrined in the earlier documents by encouraging bilateral side agreements.

28. Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles, Dec. 8, 1987, U.S.-U.S.S.R., S. TREATY DOC. NO. 100-11, at 67 (1988).

29. See *id.* art. XI(1) (right to conduct on-site inspections); *id.* arts. X(2), XI(3)-(8) (on-site inspections); *id.* art. XI(6) (monitoring of specified facilities).

30. Part IX and X, Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 32 I.L.M. 800, 862-69 (1993); see also Amy Sands & Jason Pate, *CWC Compliance Issues*, in MONTEREY INST. INT'L STUD., THE CHEMICAL WEAPONS CONVENTION: IMPLEMENTATION CHALLENGES AND SOLUTIONS 17, 18-19 (Jonathan

The intrusive monitoring regime of INF later was implemented in two 1991 agreements: the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START)<sup>31</sup> and the Treaty on Conventional Armed Forces in Europe (CFE).<sup>32</sup> In ten years, CFE had imposed legally binding limits on five classes of Treaty Limited Equipment (TLE), destroying or removing 50,000 pieces of military equipment in Central Europe.<sup>33</sup> Between 1990 and 2000 more than 3,000 CFE-associated inspections, exchanges, and notifications had taken place.<sup>34</sup> With the advent of INF, START, and CFE, onsite inspection and monitoring and assurance-oriented strategies had finally displaced external and national technical means of verification as the primary mechanism for ensuring arms control compliance.<sup>35</sup> The acme of inclusive arms control regimes incorporates a web of verifications and assurances that integrate external monitoring with national technical means, supported by data exchanges, notification obligations, and limitations on geography, to produce a zone of openness. Due to the increased detail of verification and assurance procedures, arms control agreements have grown geometrically in size and complexity.<sup>36</sup> Interestingly, the only exception to this trend is the most recent short agreement signed by President George W. Bush and Russian President Vladimir Putin to limit strategic nuclear weapons for each nation to 1700-2200 warheads.<sup>37</sup>

Rather than addressing platforms and hardware, other CBMs merely establish mechanisms for communications between states. Establishing new methods of state-to-state communication can serve as a means for routine coordination, as well as a channel for resolving ambiguity and promoting understanding during crises. One of the earliest and perhaps most interesting of these devices is the U.S.-U.S.S.R. Direct Communication Link (DCL)—known as the “Hotline.”<sup>38</sup> The Hotline was established in 1963 and updated twice.<sup>39</sup> Captured on film and memorialized in popular culture, the Hotline

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B. Tucker ed., 2001) (describing and updating regime of challenge inspections under the CWC).

31. Treaty on the Reduction and Limitation of Strategic Offensive Arms, July 31, 1991, U.S.-U.S.S.R., S. TREATY DOC. 102-20, at 1 (1991).

32. Treaty on Conventional Armed Forces in Europe, Nov. 19, 1990, S. TREATY DOC. NO. 102-8, at 223 (1991).

33. REPORT ON OPTIONS FOR CONFIDENCE AND SECURITY BUILDING MEASURES (CSBMs), VERIFICATION, NON-PROLIFERATION, ARMS CONTROL AND DISARMAMENT 13 (Dec. 2000), <http://www.nato.int/docu/pr/2000/p00-121e/rep-csbm.pdf>.

34. *Id.*

35. Kenneth W. Abbott, “Trust But Verify”: *The Production of Information in Arms Control Treaties and Other International Agreements*, 26 CORNELL INT’L L.J. 1, 36-37 (1993).

36. Antonia H. Chayes & Abram Chayes, *From Law Enforcement to Dispute Settlement: A New Approach to Arms Control Verification and Compliance*, INT’L SEC., Spring 1990, at 147, 155.

37. The agreement is only two pages long. Although it appears to have radically reversed the trend toward ever longer and more complex international arms control agreements, it is likely that subsequent implementing agreements will contain specific particulars. Strategic Offensive Reductions Treaty, U.S.-Russ., May 24, 2002, 41 I.L.M. 799. The short length of the Moscow Treaty delegated the details of the agreement to subordinates and the defense establishment in each country, and is at least partly driven by the increased trust and confidence established between the two nations in the preceding agreements.

38. The Direct Communication Link (Hotline) provided a full-time teletype network between Washington, D.C. and Moscow. See Memorandum of Understanding Regarding the Establishment of a Direct Communication Link, June 20, 1963, U.S.-U.S.S.R., 14 U.S.T. 825 (1963). The value of the Hotline has been widely acknowledged. See, e.g., Lehman II, *supra* note 10, at 648.

39. Agreement Between the United States of America and the Union of Soviet Socialist



served as the model for crises communications.<sup>40</sup> The concept of the Hotline was later expanded into more comprehensive communications centers in the late-1980s. The START and INF regimes unveiled the creation of Nuclear Risk Reduction Centers to transmit notifications and provide a mechanism for secure communications.<sup>41</sup>

## B. *Verification and Assurance*

Information that builds confidence may be produced by two strategies: verification and assurance.<sup>42</sup> The strategy of verification, also called monitoring,<sup>43</sup> involves the unilateral application of each party's efforts and resources to seek out the information it requires from others.<sup>44</sup> Verification has become a hallmark of arms control and other international agreements. Nations have implemented a variety of fact-finding methods to decipher other states' actions and intentions.<sup>45</sup> Verification may involve overt mining of public data, submitting an informal diplomatic query or even a formal demarche, external observation of other states' activities, and covert intelligence and overhead imagery collection or other means of remote sensing. Partner nations may make agreements that greatly enhance the effectiveness of verification regimes by permitting aircraft over-flight, on-site inspection, and the broadcast of unencrypted missile telemetry for verifying ballistic missile agreements. Effective verification often requires intrusive measures, such as on-site reciprocal inspection.

By committing to an international river CBM agreement, a nation accepts restrictions on its freedom of action in exchange for increased confidence of its neighbors and an increase in the transparency of their actions. Many nations warily eye any agreement that is perceived as eroding the principle of state sovereignty, which is upheld in the U.N. Charter.<sup>46</sup> The sovereignty principle reinforces the notion that on-site verification might interfere with legitimate state activities. Some nations may be unable to reach an agreement that permits on-site verification or monitoring out of fear that information unrelated to the underlying agreement might be disclosed. For decades, the Soviet Union rejected empirical on-site and overhead remote sensing verification measures as "legalized espionage."<sup>47</sup> International norms,

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Republics on Measures to Improve the U.S.-U.S.S.R. Direct Communications Link, Sept. 30, 1971, 10 I.L.M. 1174 (1971); Memorandum of Understanding on the Direct Communications Link, July 17, 1984, U.S.-U.S.S.R., 23 I.L.M. 1393 (1984).

40. See, e.g., DR. STRANGELOVE, OR: HOW I STOPPED WORRYING AND LEARNED TO LOVE THE BOMB (Columbia Pictures 1964) (parodying hotline negotiations between the U.S. President and his Soviet counterpart).

41. Agreement on the Establishment of Nuclear Risk Reduction Centers, Sept. 15, 1987, U.S.-U.S.S.R., 27 I.L.M. 76 (1988).

42. Abbott, *supra* note 35, at 4.

43. The terms "verification" and "monitoring" have been used interchangeably in arms control, and are used interchangeably here. See, e.g., Stefan Oeter, *Inspection in International Law: Monitoring Compliance and the Problem of Implementation in International Law*, 28 NETH. Y.B. INT'L L. 101, 164 (1997).

44. Abbott, *supra* note 35, at 4.

45. See Robert J. Einhorn, *Treaty Compliance*, FOREIGN POL'Y, Winter 1981-82, at 30.

46. U.N. CHARTER art. 2(7).

47. See generally Alan S. Krass, *Verification and Trust in Arms Control*, 22 J. PEACE

however, are weakening the historical notion of absolute state sovereignty, making possible new forms of greater cooperation that are more open to intrusive monitoring. Within the context of CBMs, the definition of sovereignty is evolving to accept greater intrusion into domestic affairs to achieve multilateral integration.<sup>48</sup> To remain viable, the existence of measures from neighboring states or bilateral or multilateral organizations should produce benefits to the accepting state that are outweighed by the perceived price to their sovereignty.<sup>49</sup>

On-site inspection has become one of the most effective methods of verifying compliance of international agreements, but it has rarely been employed outside the context of military agreements due to state sensitivities regarding sovereignty.<sup>50</sup> With the attribution of transboundary river agreements to the political and military stability of the basin, however, there is promise to extend the benefits of traditional arms control verification to environmental agreements. Such methods include verification and remote sensing.<sup>51</sup>

Assurance is a strategy whereby each nation gathers and provides information about itself to other states.<sup>52</sup> Under assurance, nations have an affirmative obligation to deliver to partner states useful, specific information. This information may include otherwise confidential internal documents, physical evidence, or simple or complex certifications.<sup>53</sup> Participation in assurance or acquiescence in active monitoring conveys to other parties that one is complying with one's obligations. Assurance is interactive; states recognize their partner nations' legitimate information needs, and they manifest a clear willingness and capability to provide that information. In receiving assurances, states set forth the parameters of the scope and type of the information they are seeking.<sup>54</sup> This consultative element to assurances tends to broaden and deepen the relationship between parties because it generates unscripted interaction.

Procedures designed to produce assurance need not be elaborate and may consist merely of self-reporting. Self-reporting is a simple and widespread method of reporting in which a state gathers and presents evidence about its own activities to other states to the agreement. Reporting has become

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RESEARCH 285 (1985); V.S. Vereshchetin, *International Control and the Concept of 'Open Skies,'* in FROM COEXISTENCE TO COOPERATION: INTERNATIONAL LAW AND ORGANIZATION IN THE POST-COLD WAR ERA 31, 31 (Edward McWhinney et al. eds., 1991).

48. Sucharipa-Behrmann & Franck, *supra* note 15, at 537.

49. *Id.*

50. See generally William R. Moomaw, *International Environmental Policy and the Softening of Sovereignty*, 21 FLETCHER F. WORLD AFF. 7 (1997).

51. Remote sensing has been used for military reconnaissance and arms control verification since the Cold War. During the 1960s, remote sensing became a tool of the scientific community, collecting information on the Earth's weather patterns, monitoring natural resources, environmental surveys, land use planning, and the study of erosion. It has been suggested that remote sensing could be utilized for monitoring multilateral environmental agreements. See, e.g., Allison F. Gardner, Student Article, *Environmental Monitoring's Undiscovered Country: Developing a Satellite Remote Monitoring System to Implement the Kyoto Protocol's Global Emissions-Trading Program*, 9 N.Y.U. ENVTL. L.J. 152, 192-94 (2000).

52. Abbott, *supra* note 35, at 4-5.

53. *Id.* at 4.

54. *Id.* at 29.

a common element of international treaties and environmental agreements.<sup>55</sup> Increasingly, such reporting in the context of an environmental treaty is subject to independent review or assessment of state compliance by an international organization created under the agreement for that purpose.<sup>56</sup>

Both verification and assurance strategies are designed to alleviate the information shortfall that is a constant feature of international tension. By filling the void in information, verification and assurance ease the fear of those nations at a perceived disadvantage, while providing some measure of restraint to those states perceived to be at an advantage. Verification and assurance can serve as especially powerful CBMs along international rivers because they bring full disclosure of ecological, economic, and navigational uses of the river throughout the river basin. Crafting CBMs to ameliorate conflict along transboundary rivers supports and extends the promotion of preventive measures, upon which the United Nations' treaty-making system is largely built.<sup>57</sup>

### C. *Procedural and Substantive Compliance*

CBMs are strongest when they are designed to advance both procedural and substantive compliance by parties to the agreement. Procedural compliance involves fulfilling one's obligation of process-oriented matters, such as attending scheduled meetings, filing appropriate reports, and using established mechanisms for implementing the agreement.<sup>58</sup> Substantive compliance is focused on fulfilling specific physical obligations. These obligations—such as capturing or releasing river flow that has an impact on a lower riparian—go to the heart of the agreement.<sup>59</sup> While the focus on most analysis regarding international agreements is, quite correctly, placed disproportionately on substantive compliance, procedural compliance has considerable independent benefits. Within the context of rival or hostile neighbors, procedural compliance can begin to construct bilateral arrangements for peacefully working out differences. Successfully pursued and implemented, procedural compliance tends to feed on itself, leading to broader and deeper interaction between nations who are parties to an agreement. Both substantive compliance and procedural compliance are distinct from effectiveness, which focuses on whether the agreement itself is achieving the goals it has established. One could assess an individual state's substantive and procedural compliance, i.e., asking whether the state is carrying out the obligations that it had agreed to, independently from determining if an agreement is meeting its objectives.<sup>60</sup>

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55. Kamen Sachariew, *Promoting Compliance with International Environmental Legal Standards: Reflections on Monitoring and Reporting Systems*, 2 Y.B. INT'L ENVTL. L. 31, 39-40 (1991).

56. Michael Bothe, *The Evaluation of Enforcement Mechanisms in International Environmental Law*, in ENFORCING STANDARDS: ECONOMIC MECHANISMS AS VIABLE MEANS 13, 22 (Rüdiger Wolfrum ed., 1996).

57. Sucharipa-Behrmann & Franck, *supra* note 15, at 492-93.

58. Edith Brown Weiss, *Understanding Compliance with International Environmental Agreements: The Baker's Dozen Myths*, 32 U. RICH. L. REV. 1555, 1563 (1999).

59. *Id.*

60. *Id.* at 1564; Edith Brown Weiss & Harold K. Jacobson, *Getting Countries To Comply with International Agreements*, ENV'T, July-Aug. 1999, at 16, 18.

The value of CBMs has not been limited to the bipolarity of the Cold War. In the last few decades, regional rivals and competitors have explored and implemented CBMs, sometimes strengthening regional stability. This process perhaps may be best illustrated with the case drawn from South America. Through a slow, "brick-by-brick" building project by Brazil and Argentina, a series of increasingly substantial CBMs arose out of the two states' narrow bilateral commercial accords in the 1980s.<sup>61</sup> Expanding from commercial agreements into a web of ambitious sectoral integration discussions, the two nations began to share information on military matters, including nuclear research, physics, nuclear information, isotope development and enrichment, fast breeder reactor development, nuclear safeguard techniques, and the promise of mutual aid in event of a nuclear accident.<sup>62</sup> The concomitant goodwill fertilized the creation, in 1985, of a joint working group, established under the direction of the countries' foreign ministries to explore new opportunities for collaboration.<sup>63</sup> Further agreements followed, fundamentally shifting the boundaries of reasonable debate in both countries. By 1988, both military and civilian sectors in Argentina and Brazil ceased viewing the other country as a security threat.<sup>64</sup>

Thus, beyond the profit obtained from parties' substantive compliance with the provisions of international river agreements is the prospect of collateral procedural benefits from learning to work together. India and Pakistan, in particular, experience disproportionate interaction from their relationship out of the Indus Waters Commission since the two governments have little other official interaction. The resulting direct contact between the parties to river agreements tends to prod the riparians toward "thick interaction."<sup>65</sup> International law also offers riparians fresh and effective institutions that tend to make relationships throughout the basin more interdependent.<sup>66</sup>

Shifting from CBMs, Part III focuses on the political and geographic landscape of South Asia. The section explains the international security architecture among India, Pakistan, and Bangladesh, and explores the hydrological and historical context of transboundary river agreements, which are analyzed in Part IV. Part V unites CBMs with transboundary river agreements generally, and the Indus and Ganges agreements specifically, and draws some observations applicable to South Asia, as well as other international river basins. Part V also seeks to address whether transboundary river CBMs are effective before the Conclusion in Part VI.

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61. Michael Barletta, *Democratic Security and Diversionary Peace: Nuclear Confidence-Building in Argentina and Brazil*, NAT'L SEC. STUD. Q., Summer 1999, at 19, 22.

62. *Id.* at 22.

63. *Id.*

64. As a direct result of nuclear transparency, military planners on both sides to the border revised war plans to accommodate the diminished security threat. This assessment was based on interviews by Michael Barletta with Antonio Frederico Moreno, Director of Planning, Argentine Joint Chiefs of Staff, and Manoel Augusto Teixeira, Director of Planning, Brazilian Army Ministry in São Paulo, on November 13, 1994. *Id.*

65. Eyal Benvenisti, *Collective Action in the Utilization of Share Freshwater: The Challenges of International Water Resources Law*, 90 AM. J. INT'L L. 384, 400 (1996).

66. *Id.*

## III. THE HYDROPOLITICS IN SOUTH ASIA

South Asia faces a confluence of water scarcity coupled with incendiary international politics. As a global environmental issue, transboundary river issues are coalescing, threatening human security and sustainable development.<sup>67</sup> This has thrust the problem of access to transboundary river water from the domain of environmental chic into a bona fide issue of regional, if not global, security. This dynamic affects river basins throughout the world, leaving no continent untouched,<sup>68</sup> and it is at the heart of the foreign policy and security architecture in South Asia.

The India-Pakistan relationship is one of the few remaining wide-ranging and globally significant security complexes.<sup>69</sup> American political scientist Samuel Huntington, who places India and Pakistan at the center of his "clash of civilizations" thesis, contends that the historic competition between Hindus and Muslims in South Asia makes the region one of the most dangerous in the world.<sup>70</sup> The region is wracked by overpopulation and has suffered from severe environmental degradation.<sup>71</sup> From a security perspective, environmental degradation contributes to instability and increases the possibility of war on the subcontinent.<sup>72</sup> Pressure on sustainable freshwater is particularly acute. The problem is not that the subcontinent lacks sufficient freshwater, but that what freshwater it has is distributed unevenly. Bangladesh, for example, enjoys, and at times even suffers from, an abundance of freshwater, whereas parts of India and Pakistan face serious and chronic shortages that cannot be remedied by effective irrigation.<sup>73</sup> Escalating environmental stress, brought on in part by immense and growing populations,

67. U.S. COMM'N ON NAT'L SEC. IN THE TWENTY-FIRST CENTURY, *NEW WORLD COMING: AMERICAN SECURITY IN THE TWENTY-FIRST CENTURY*, SUPPORTING RESEARCH AND ANALYSIS 16 (Sept. 15, 1999), [http://www.nssg.gov/NWR\\_A.pdf](http://www.nssg.gov/NWR_A.pdf); THE WHITE HOUSE, *A NATIONAL SECURITY STRATEGY FOR A NEW CENTURY* 13 (Dec. 1999), [http://www.dtic.mil/doctrine/jel/other\\_pubs/nssr99.pdf](http://www.dtic.mil/doctrine/jel/other_pubs/nssr99.pdf).

68. This is a global phenomenon, with no continent escaping the trend. Even in the normally verdant southeast United States, increased population growth and development has surpassed sustainable withdrawals from the Apalachicola-Chattahoochee-Flint River Basin, generating dispute among Florida, Georgia and Alabama. See, e.g., Douglas Jehl, *Atlanta's Growing Thirst Creates Water War*, N.Y. TIMES, May 27, 2002, at A1. Along the Mexico-Texas border, tensions are rising over the failure of Mexico to abide by a 1944 treaty to release water from tributaries of the Rio Grande, located in Mexico, that flow into Texas. See Mary Jordan & Paul Duggan, *Water Dispute Divides Texas and Mexico*, WASH. POST, May 25, 2002, at A3.

69. See generally SOUTH ASIAN INSECURITY AND THE GREAT POWERS (Barry Buzan & Gowher Rizvi eds., 1986) (arguing that the India-Pakistan relationship is best described as a "security complex" because it is long-lasting and multi-dimensional). Nuclear theorists can disagree on whether the introduction of nuclear capabilities to the subcontinent may serve to stabilize or destabilize the security situation. It is clear, however, that the potential for devastating consequences from war have increased greatly. A reportedly classified Pentagon study estimates that a nuclear war between Pakistan and India would result in twelve million deaths. See Thom Shanker, *Twelve Million Could Die at Once in an India-Pakistan Nuclear War*, N.Y. TIMES, May 27, 2002, at A5; see also Louis René Beres, *In a Dark Time: The Expected Consequences of an India-Pakistan Nuclear Exchange*, 14 AM. U. INT'L L. REV. 497, 510-15 (1998).

70. Samuel Huntington, *The Clash of Civilizations?*, FOREIGN AFF., Summer 1993, at 22, 33-34.

71. NORMAN MYERS, *ULTIMATE SECURITY: THE ENVIRONMENTAL BASIS OF POLITICAL STABILITY* 101-03 (1993).

72. SHAUKAT HASSAN, *ENVIRONMENTAL ISSUES AND SECURITY IN SOUTH ASIA* (Adelphi Papers No. 262, 1991).

73. ARUN P. ELHANCE, *HYDROPOLITICS IN THE THIRD WORLD: CONFLICT AND COOPERATION IN INTERNATIONAL RIVER BASINS* 156-66 (1999).

has given rise to an ecological tragedy on the subcontinent. These trends hamper local economies and make sustainable development an elusive goal. To avoid further environmental catastrophe, India, Pakistan, and Bangladesh will have to construct a more stable security regime that involves more extensive resource cooperation. In this way, these nations can build upon the accomplishments of the Indus and Ganges treaties.<sup>74</sup>

The origins of river water disputes on the subcontinent can be traced back to the institutions created by the British Raj. The British colonial government pursued policies encouraging deforestation and sprawling as well as inefficient irrigation systems; these policies degraded the land for more than a century. "Today, soil erosion, waterlogging and flooding are among the many serious problems whose roots can be traced to the economic practices of the colonial era."<sup>75</sup>

After World War II, British India was divided, producing a subcontinent geographically dominated by a hegemonic India surrounded by weaker states. War erupted between India and Pakistan at the time of partition in 1947-1948. There were additional conflicts along the West Pakistan-India border in 1965, and in 1971, when East Pakistan seceded from Pakistan and became Bangladesh.<sup>76</sup>

#### A. *Security Politics in South Asia*

The security politics of South Asia are driven by a feeling of being under siege. India views itself as facing a threat "from one or another combination of Islamic, Western, Chinese, and small regional powers;" some Indians see their country surrounded by a sea of extremist Muslims.<sup>77</sup> The countries of the region also perceive their state and ethnic group as encircled and vulnerable to attack from hostile outsiders.<sup>78</sup> This psychology compels each side to view itself as a minority facing more powerful opponents. Indian threat perceptions rotate among the U.S.-Pakistan alliance, fear of a China-U.S. rapprochement, or extremist Muslim sympathies among the Indian Muslim minority. Pakistan's central explanation for tensions on the subcontinent is straight forward: since its creation, Pakistan has seen itself as resisting a concerted attempt by India to use its overwhelming size, military capabilities, and economic power to crush Pakistan and establish regional hegemony.<sup>79</sup>

Each of India's neighbors fears the power of New Delhi, but their apprehension varies in intensity.<sup>80</sup> Like India and Pakistan, Bangladesh views itself as a minority state. A culture of resistance to compromise that is driven by a sense of geopolitical vulnerability also exists in Dhaka. Bangladesh views the major source of conflict on the subcontinent to be Indian

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74. Jerome Delli Priscoli, *Water and Civilization: Using History To Reframe Water Policy Debates and To Build a New Ecological Realism*, 1 WATER POL'Y 623, 626 (1998).

75. Matthew & Zaidi, *supra* note 2, at 68.

76. DAVID W. ZIEGLER, *WAR, PEACE AND INTERNATIONAL POLITICS* 69-74 (8th ed. 1999).

77. Stephen P. Cohen, *Causes of Conflict and Conditions for Peace in South Asia*, in RESOLVING REGIONAL CONFLICTS 105, 109-10 (Roger E. Kanet ed., 1998).

78. *Id.* at 108.

79. *Id.* at 110.

80. *Id.* at 117.

domination and arrogance, coupled with ethnic and environmental pressures, while Bangladeshis view themselves as a benign and neutral power.<sup>81</sup> Some in Bangladesh, like many in Pakistan, seek to offset Indian hegemony by building up their own power and by building alliances with outside powers and regional states.<sup>82</sup>

One scholar has described the core cause of the Indo-Pakistan conflict as a "paired minority" conflict, in which both India and Pakistan are driven by a fear of attack by the other. In "paired minority conflicts," each side sees itself as the vulnerable entity, exposed to constant attack from more powerful outsiders.<sup>83</sup> It is extraordinarily difficult for either side to make concessions, even on trivial matters, because this may be seen as confirming others' perceptions of one's own weakness, and invite further demands. Resistance to compromise sets in because compromise may be seen at home as a sign of weakness, or worse, as a sign of collaboration with the enemy.<sup>84</sup> The result is that the foreign ministries and diplomatic corps responsible for negotiations in each country atrophy and lose their capacity to solve problems with the opposing state.<sup>85</sup>

The model of paired minority conflict also explains why India, Pakistan, and Bangladesh appear willing to push relations to the brink of war over issues that outsiders might view as irrational. Minority states feel that the rules of behavior are relaxed for them because their very existence and identity are at stake.<sup>86</sup> Although both India and Pakistan are susceptible to "deficient strategic decisionmaking" driven by a sense of overwhelming fear and helplessness that could precipitate suicidal destructiveness in an emergency, this strategic decision making pathology is more likely to surface in Pakistan.<sup>87</sup> "Their struggle is a form of total war, not a limited conflict. Any means, fair or foul, may be used because the enemy has destruction in mind."<sup>88</sup>

As a consequence of being a paired minority conflict, India and Pakistan do not have widespread opportunities to build cooperation and develop structures generating mutual confidence. This magnifies the importance of any opportunity to engage in confidence building mechanisms with regard to joint management of environmental resources since fewer opportunities to build confidence between the parties exist in other areas of the relationship.

Both India and Pakistan experienced post-partition traumas that cemented their feeling of minority states under siege. For India, it was the

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81. *Id.* at 107.

82. *Id.* at 117.

83. *Id.* at 108.

84. Pakistan, in particular, struggles with an internal political movement that tends to attack compromise with India as a sign of weakness. Pakistani General Pervez Musharraf led a military coup in Pakistan in October 2000 in the wake of the signing of the Lahore Document, and Islamabad's subsequent embarrassment over Kargil. See V.G. Ragavan, *Limited War and Nuclear Escalation in South Asia*, NONPROLIFERATION REV., Fall/Winter 2001, at 1, 2; see also Cohen, *supra* note 77, at 118.

85. Cohen, *supra* note 77, at 118. The foreign ministries may perform brilliantly elsewhere, but their ability to negotiate with the other side deteriorates. *Id.*

86. *Id.* at 119.

87. ASHLEY J. TELLIS, INDIA'S EMERGING NUCLEAR POSTURE: BETWEEN RECESSED DETERRENT AND READY ARSENAL 743-44 (2001).

88. Cohen, *supra* note 77, at 119.

defeat by China in 1962; for Pakistan, it was the humiliation of the country by India in 1971.<sup>89</sup> By the early 1970s, when the United States and China began their strategic cooperation to contain the Soviet Union, Pakistan gravitated toward China as well. This, needless to say, only heightened suspicion in New Delhi. Consequently, the diplomatic gains of earlier generations of Indian and Pakistani leaders—figures such as Mahatma Gandhi, Sardar Patel, Mohammed Ali Jinnah, and Jawaharlal Nehru—became impossible to extend. As early as the 1950s, India and Pakistan had reached agreements on trade, transit, hotlines, and other confidence building measures.<sup>90</sup> Since the war in 1971, however, their animosity has become deeply entrenched, highlighting the lack of progress in diplomacy and conventional military confidence building for the past three decades. One source of promise in this discouraging relationship is India's foreign policy shift away from direct competition with Islamabad toward a policy of "benign neglect."<sup>91</sup> New Delhi's new perspective is not driven by a desire to "beat" Pakistan through an indirect approach, "but by fears of increasing dangers in the regional environment and by a recognition that continuing underdevelopment will make India only more insecure than before."<sup>92</sup> For its part, Pakistan, too, has shifted away from obsession with India, and has even proposed that the two powers focus on creating nuclear risk-reduction and confidence building measures.<sup>93</sup>

A new generation of more sophisticated and worldly military officers and diplomats in Pakistan and India is quickly emerging. These professionals are driven less by personal hatred of the other side and are largely free of blaming their countries' misfortunes on the Soviet-American Cold War rivalry.<sup>94</sup> Driven by realism, fresh approaches to economics, and an understanding of the consequences of nuclear war, this new generation represents more fertile ground—leaders who could more easily embrace and capitalize on new CBMs than those in recent past.

#### B. *The Indus and the Ganges Rivers*

Against the backdrop of geopolitical instability in South Asia is an increasing demand for river water, driven by expanding populations and the quest for economic and social development. The environmental and economic pressures on scarce freshwater on the subcontinent serve as an important component of the geopolitical conflict.<sup>95</sup> Some amount of resource conflict is an unavoidable element of social interaction, and competition among social

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89. *Id.* at 115.

90. *Id.* at 114.

91. Ashley J. Tellis et al., *Sources of Conflict in Asia*, in *SOURCES OF CONFLICT IN THE TWENTY-FIRST CENTURY* 43, 150 (Zalmay Khalilzad & Ian O. Lesser eds., 1998).

92. *Id.* at 150-51.

93. Gaurav Kampani & Haider K. Nizamani, *A Shift Away from Indo-centrism?*, DAWN, Apr. 16, 2001, <http://www.dawn.com/2001/04/16/op.htm#2>.

94. Cohen, *supra* note 77, at 121-22.

95. See, e.g., Peter H. Gleick, *Water and Conflict: Fresh Water Resources and International Security*, INT'L SEC., Summer 1993, at 79; Christopher L. Kukuk & David A. Deese, *At the Water's Edge: Regional Conflict and Cooperation Over Fresh Water*, 1 UCLA J. INT'L L. & FOREIGN AFF. 21 (1996).



choices contributes to efficient outcomes.<sup>96</sup> The challenge, of course, is to develop peaceful mechanisms for resolving acute as well as chronic conflict before it erupts into violence. Nowhere is the challenge more compelling than in South Asia, where management and apportionment of international river flow is a fulcrum for peace or war.<sup>97</sup>

There are over 260 international river basins watersheds worldwide. These international basins account for about sixty percent of the global river flow.<sup>98</sup> Catchment basins cover 45.3 percent of the land surface of the Earth, and affect forty percent of the world's population.<sup>99</sup> Immense rivers like the Indus and Ganges define the landscape, stretching for thousands of kilometers. Giant rivers may form the spatial and functional core of a country, or even a civilization.<sup>100</sup> Successful agricultural economies, effective public health, and industrial development are all severely threatened by a lack of access to international river water. International drainage basins link riparian states into a common and interdependent freshwater system that connects the agriculture, industry, energy, and transportation sectors into an integrated regional unit. Action by one riparian may affect the quantity and quality of river water available to neighboring states, imposing direct costs on other states in the basin. Basin nations share not just a river, but an entire ecosphere. Consequently, the potential for conflict, and the possibility of compromise and cooperation, exist side by side.

The name of the river Indus is derived from the Sanskrit word "*sindhu*," which means "river" or "great stream," and is the source of India's name. The Indus River begins at 17,000 feet above sea level in southwestern Tibet, winds for 2,900 kilometers through the Himalayas in Jammu and Kashmir before emptying into the Arabian Sea. For 320 kilometers it flows northwest, crossing the southeastern boundary of Jammu and Kashmir. It has a total drainage basin area of about 450,000 square miles, encompassing much territory in both Pakistan and India. The river's annual flow is about 272 billion cubic yards (207 billion cubic meters), twice that of the Nile and three times that of the Tigris and Euphrates combined. Under British rule, a vast irrigation canal system was constructed throughout the Indus Basin, comprising the largest irrigation system in the world. After Pakistan and India became separate states, the unified approach to the basin brought conflict between the two nations, with headwaters belonging to India, and canals running to Pakistan.

Pakistan certainly feels vulnerable to Indian mischief regarding the Indus, fueled by a general obsession over fears of being dominated by

96. Evita Schmieg, *Crises Prevention: Lessons for Development Cooperation*, in BONN INT'L CENTER FOR CONVERSION, BRIEF 16: PRACTICAL DISARMAMENT 10 (2000).

97. The terms "international river" and "transboundary river" are used interchangeably to mean rivers that border on or flow through two or more nations.

98. Aaron T. Wolf, *Transboundary Waters: Sharing Benefits, Lessons Learned*, Thematic Background Paper, International Conference on Freshwater, Bonn, Germany, Dec. 2-7, 2001, at 1 (unpublished manuscript, copy on file with author). The number of international river basins has expanded from 214 listed in 1978, with the growth attributable to the reorganization of the state system in Europe following the breakup of the Soviet Union and Yugoslavia, as well as to improved mapping technology. *Id.* at 2.

99. *Id.* at 1.

100. Priscoli, *supra* note 74, at 627.

India.<sup>101</sup> Most analysts contend that Pakistan's exposure does not approach the desperately alarmist position described by David E. Lilienthal, a former chairman of the Tennessee Valley Authority, who proclaimed fifty years ago: "No army, with bombs and shellfire, could devastate a land as thoroughly as Pakistan could be devastated by the simple expedient of India's permanently shutting off the sources of water that keep the fields and people of Pakistan alive."<sup>102</sup> Still, Pakistan is geographically vulnerable as the lower riparian.

For Bangladesh, there is too much water during the monsoon, and too little water during the dire dry season. This annual pattern dominates life in Bangladesh, and is the foundation for understanding security and the environment in the country.<sup>103</sup> Bangladesh, with a population density among the highest in the world at 850 people per square kilometer, sits among three immense rivers that form an interconnected system—the Ganges, the Brahmaputra, and the Meghna. The nation is very rich in water resources and fertile land, but there is wide seasonal variation in the quantity of water from the rivers. Ninety percent of the river flow originates outside the country, so cooperation with the upper riparians—India, Bhutan, and Nepal—is essential for controlling flooding and relieving drought. These huge flows of water, entering the country from the outside, drain into the Bay of Bengal—enough water to submerge the country in more than nine meters of water annually.<sup>104</sup>

The Ganges, or *Ganga* in Hindi, stretches 1560 miles (2510 kilometers) in a southeasterly flow across the Gangetic Plain from Uttar Pradesh through the Indian states of Bihar and West Bengal. The Gangetic Plain is one of the most densely populated and fertile areas in the world. Throughout the plain, the only topographical relief is the wide and sluggish river. The Ganges has five headstreams<sup>105</sup> that all rise in the northernmost Uttar Pradesh state in India, and its major tributaries include the Yamuna, Ramganga, and Ghaghara rivers in Uttar Pradesh and the Gandak, Burhi Gandak, and Kosi rivers in Bihar. In central Bangladesh, the river is joined by the Brahmaputra River and the Meghna River in the northeast above Chandpur. The combined waters of these tributaries comprise an immense basin with channels spreading out to form a delta 200 miles wide, which is shared by Bangladesh and India. The total drainage area encompasses nearly 400,000 square miles, or roughly one-fourth the territory of India, and the area supports a half-billion people. Since ancient times, people across the plain have used the Ganges for irrigating cash crops such as wheat, sugarcane, cotton, and oilseed to sell in Uttar Pradesh and Bihar.

The Hindus are perhaps more closely associated with the Ganges—culturally, religiously, and socially—than any people to any major river in the world. Although Egypt is arguably more reliant on the waters of the Nile for

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101. Tellis et al., *supra* note 91, at 148-151.

102. David E. Lilienthal, *Another "Korea" in the Making?*, *COLLIER'S*, Apr. 4, 1951, at 58.

103. Ainun Nishat, *Development and Management of Water Resources in Bangladesh: Post-1996 Treaty Opportunities*, in *SUSTAINABLE DEVELOPMENT OF THE GANGES-BRAHMAPUTRA-MEGHNA BASINS* 80, 81 (Asit K. Biswas & Juha I. Uitto eds., 2001) [hereinafter *SUSTAINABLE DEVELOPMENT*].

104. *Id.* at 80.

105. The headstreams are Bhagirathi, Alaknanda, Mandakini, Dhauliganga, and Pindar.

its economy, health, and development, the Hindus' need for the Ganges transcends development to become spiritual.

Understanding the role of international rivers in regional security informs a more complete model of geopolitics by infusing traditional notions of national security with issues of human security, environmental protection, and sustainable economic development. Environmental stress, pressure from industrialization and agriculture, increasing population rates, and ineffective resource management contribute to the degradation of international river water. Major environmental and economic interest groups have been most effective at promoting their agendas domestically and internationally. A study by the Pacific Institute for Studies in Development, Environment, and Security concluded that a preoccupation with agricultural and economic development has ignored other equities, such as access to water for the poor, the health of the aquatic environment, and the integrity of waterside communities and cultures.<sup>106</sup>

#### IV. TRANSBOUNDARY RIVER AGREEMENTS IN SOUTH ASIA

Some of the earliest agreements in modern international law reflected the inseparable linkage between river agreements, interstate politics, and international security. Treaties that marked the end of the Thirty Years' War in 1648, including the Treaty of Westphalia and the Treaty of Munster, affected much of the Rhine and Upper Danube, in addition to their well-known role as a catalyst for the formation of modern European nation-states.<sup>107</sup> In the Treaty of Munster, for example, Article 12 "opened the lower Rhine to free navigation and trade," but closed the Scheldt River in the Spanish Netherlands as "a concession to the merchants of Amsterdam, who sought a competitive advantage over their rivals in Antwerp."<sup>108</sup> These conflicting examples of the Rhine and the Scheldt Rivers represent competing legal and ideological principles of transboundary rivers between natural law—in which rivers were held to be the property of everyone or no one—and Roman law—in which rivers were regarded as the property of the citizens and as a subject of the empire.<sup>109</sup> These conflicts resurface in modern transboundary river disputes. Surveying 300 years of transboundary river agreements, one scholar concluded that issues of war and peace, rather than conflicting legal principles, were the paramount features of the geopolitical context of international river agreements between 1648 and 1948.<sup>110</sup> Indeed,

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106. P.H. GLEICK ET AL., PAC. INST. FOR STUD. IN DEV., ENV'T, & SEC., THREATS TO THE WORLD'S FRESHWATER RESOURCES 2-3, 51 (2001), [http://www.pacinst.org/reports/threats\\_to\\_the\\_worlds\\_freshwater.pdf](http://www.pacinst.org/reports/threats_to_the_worlds_freshwater.pdf). In some areas of South Asia, more than three-fourths of the population lacks access to clean drinking water or adequate water-related sanitation. Worldwide, such shortages lead to over three million deaths per year. *Id.* at 5-8. Waterborne disease invades international watersheds in Asia and Africa. Malaria alone afflicts 300 to 500 million people each year and kills more than two million. Tom Carter, *DDT: Malaria's Answer in Africa?*, WASH. TIMES, June 16, 2002, at A1.

107. James L. Wescoat, Jr., *Main Currents in Early Multilateral Water Treaties: A Historical-Geographic Perspective, 1648-1948*, 7 COLO. J. INT'L ENVTL. L. & POL'Y 39, 49-50 (1996).

108. *Id.* at 50.

109. *Id.*; see also EUGENE F. WARE, ROMAN WATER LAW (1905).

110. Wescoat, Jr., *supra* note 107, at 71.

the history of transboundary river agreements is one of incremental but steady construction of institutional capacity building among river water competitors.<sup>111</sup>

In the modern age, access to the international river basins throughout the Third World<sup>112</sup> has generated intense competition among riparian states,<sup>113</sup> as well as yielded unsung success from international cooperation. The paradox is that, while promoting strife and gamesmanship on the one hand, freshwater scarcity has proved to be one of humanity's most durable laboratories for building community.<sup>114</sup>

The two primary river agreements in South Asia—the Indus Waters Treaty between India and Pakistan and the Ganges agreement between India and Bangladesh—have contributed stabilizing machinery to the political relationship between the parties. India is the geopolitical center of South Asia. The government in New Delhi asserts disproportionate power in relation to the other states on the subcontinent, effectively exercising regional hegemony, so initial steps toward transboundary river cooperation were relatively measured and conservative. The Indus and Ganges treaty regimes were intentionally designed to limit cooperation to narrowly defined areas because of the difficulty of close cooperation between India, Pakistan, and Bangladesh.<sup>115</sup>

#### A. *The Indus and the Ganges Treaties*

Following the partition of the Indian subcontinent in 1947, a dispute arose over the Indus waters when India cut off water flow to some Pakistani canals at the start of the summer irrigation season in 1948.<sup>116</sup> The disagreement simmered until it was successfully resolved in 1960 after eight years of negotiation. The conclusion of the Indus Waters Treaty,<sup>117</sup> which was made possible by funding and engaged diplomacy by the United States and

111. *Id.* at 72.

112. This article focuses on three nations in South Asia, which may be described as part of the "Third World." The term "Third World" (*Tiers Monde* in French) was initially coined by the French demographer Alfred Sauvy in 1952 as an analogy from the "third estate." The third estate described the commoners in France before and during the French Revolution. The term was adopted by twenty-nine African and Asian nations at the Conference in Bandung, Java, Indonesia in 1955, and came to denote those nations neutral of the ideological divide during the Cold War. See *The Asian Language*, *ASIaweek*, Mar. 5, 1999, at 70. Because South Asia encompasses immense diversity of culture, economic development, and natural resources, as well as political systems, the term "Third World" is an incomplete, if not inaccurate description. On the Third World as a collective, see John Ravenhill, *The North-South Balance of Power*, 66 *INT'L AFF.* 731 (1990).

113. In 1980, Egyptian President Anwar el-Sadat said, "If Ethiopia takes any action to block our right to the Nile waters, there will be no alternative for us but to use force." Norman Myers, *Environment and Security*, *FOREIGN POL'Y*, Spring 1989, at 32.

114. Priscoli, *supra* note 74, at 626.

115. Nurit Kliot et al., *Development of Institutional Frameworks for the Management of Transboundary Water Resources*, 1 *INT'L J. GLOBAL ENVTL. ISSUES* 306, 321 (2001).

116. G. T. Keith Pitman, *The Role of the World Bank in Enhancing Co-operation and Resolving Conflict on International Watercourses: The Case of the Indus Basin*, in *INTERNATIONAL WATERCOURSES: ENHANCING CO-OPERATION AND MANAGING CONFLICT* 155, 158 (Salman M.A. Salman & Laurence Boisson de Chazournes eds., World Bank Technical Paper No. 414, 1998).

117. Indus Waters Treaty, Sept. 19, 1960, India-Pak., 419 *U.N.T.S.* 125.

the World Bank, reordered and stabilized hydropolitics throughout the basin.<sup>118</sup>

The Indus Waters Treaty was the first major transboundary river agreement in South Asia.<sup>119</sup> The terms of the agreement gave India control of the eastern rivers Ravi, Sutlej, and Beas; Pakistan received control over the western rivers Indus, Jhelum, and Chenab. Pakistan was allocated 81 percent of the Indus' water, while India received 19 percent. The treaty also established a system of conflict resolution by creating a Permanent Water Commission composed of Indian and Pakistani water commissioners. Only when these organs failed would a dispute be referred to an arbitral court or neutral expert, a last resort that the parties have never sought.<sup>120</sup> A period of transition followed the signing of the agreement during which each state developed its irrigation infrastructure to conform to the treaty.<sup>121</sup> Thus, the waters of the Indus were divided in the same way that India was partitioned. In addition to a simple division of river flow, the treaty calls on both parties to exchange flow data for rivers, canals, and streams, and to submit disputes to the Permanent Indus Commission and an international court of arbitration.<sup>122</sup> This system of checks and inspections ensures that each state complies with its water quotas, and that neither country develops projects that diminish the quantity or quality of the water allocated to the other state.

The agreement permits India, the upper riparian state, to use the flowing water, but it prohibits any construction that facilitates storage or diversion of the river water. Pakistan fears that India could disturb the flow of the Jhelum by building a dam in India. A dam could disrupt the irrigation pattern in central and southern Punjab, where farmers depend on the Jhelum's water, by flooding the region when water was not required and withholding the flow when it was most needed. It could make a large part of the Punjab barren, but India would need at least 15 years to build such a dam.<sup>123</sup> Pakistan has also raised concerns that India could divert the flow of the Chenab to the Ravi in order to use the river as a weapon. The Chenab is only fifty kilometers from the Ravi River on the Indian plain; if India dug a canal to connect the two waterways, it could consume the entire flow of the Chenab to expand its irrigation network to the Rajasthan desert.<sup>124</sup> Either action would unilaterally abrogate the treaty. But despite Pakistani concerns, India has not shown a serious inclination to violate the treaty, as the economic and engineering costs

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118. UNITED NATIONS, LEGISLATIVE TEXTS AND TREATY PROVISION CONCERNING THE UTILIZATION OF INTERNATIONAL RIVERS FOR OTHER PURPOSES THAN NAVIGATION 300, U.N. Doc. ST/LEG/Ser. B/12, U.N. Sales No. 63.V.4 (1963).

119. See, e.g., Asit K. Biswas, *Indus Waters Treaty: The Negotiating Process*, 17 WATER INT'L 201 (1992); Jagat S. Mehta, *The Indus Water Treaty: A Case Study in the Resolution of an International River Basin Conflict*, 12 NATURAL RESOURCES F. 69 (1988).

120. Kliot et al., *supra* note 115, at 323.

121. *Id.* at 321.

122. Indus Waters Treaty, Sept. 19, 1960, India-Pak., art. IX, 419 U.N.T.S. 125 at 150-152; FARZANA NOSHAB & NADIA MUSHTAQ, INSTITUTE OF STRATEGIC STUDIES, WATER DISPUTES IN SOUTH ASIA (2001), <http://www.issi.org/pk/strategic-studies-htm/2001/no.3/article/4a.htm>. See also Mehta, *supra* note 119.

123. Ahmad Fraz Khan, *Chenab, Jhelum Vulnerable to Treaty Mischief: Indian Minister's Threat*, DAWN, May 26, 2002, <http://www.dawn.com/2002/05/26/nat8.htm>.

124. *Id.*

would be exorbitant and the political costs unacceptably high. Many in Pakistan would view river diversion as an act of war,<sup>125</sup> and India could expect Pakistan to retaliate against Indian dams.<sup>126</sup>

After forty years, the Indus Waters Treaty has survived intact despite two wars—in 1965 and 1971—and numerous crises induced by the threat of clashes. This turbulence has made the subcontinent the most likely place in the world for a nuclear war.<sup>127</sup> But the Indus Commission has successfully resolved controversies and disputes that have surfaced during this period. Both rivals have respected the provisions of the agreement by fulfilling their responsibilities and by taking care not to politicize the arrangement or militarize the system of dams and hydroelectric facilities, canals, and water-treatment and distribution facilities throughout the basin.<sup>128</sup> Although the original treaty foresaw an era of joint planning and cooperation for the development of the river, the two governments have not yet referred any mutual or cooperative development project to the Commission.<sup>129</sup> Consequently, the provisions for basin-wide inspection and monitoring have become the most important sections of the treaty. Even though the agreement never blossomed as was originally hoped, it has still been able to serve as a stabilizing mechanism between the two competitors. The agreement has also piqued interest in and laid the groundwork for other development agreements in South Asia.<sup>130</sup>

In 1951, while Bangladesh was still part of Pakistan, India began a plan to construct the Farraka Barrage close to the Bangladeshi border with India. The Barrage was intended to divert water from the Ganges to the Hooghly River and redirect it toward enhancing the draft and flushing the ancient port of Calcutta.<sup>131</sup> Bangladesh immediately protested the plan, and the dispute was under negotiation between Bangladesh and India for nearly fifty years.<sup>132</sup> The dispute centered on the amount of water that India would release to Bangladesh for domestic use and agriculture. Bangladesh argued that its normal requirements of the Ganges during the dry season (January 1-May 31) amounted to the entire flow of the river, and that any diminution would severely hinder irrigation and domestic and municipal uses downstream. The Barrage was commissioned in 1975, over the objection of Bangladesh, but the two countries reached temporary accommodation in 1977 on sharing of the

125. *See id.*

126. Dams are not lawful targets under the customary law of war, but such observance might not be reciprocated in a major war between the two nuclear states. *See* Protocol I Additional to the Geneva Conventions of 1949, arts. 56-58, 1125 U.N.T.S. 3, June 8, 1977.

127. *See* M.V. Ramana & A.H. Nayyar, *India, Pakistan and the Bomb*, SCI. AM., Dec. 2001, at 72, 72, 74; Strobe Talbott, *Dealing with the Bomb in South Asia*, FOREIGN AFF., Mar. 1999, at 110.

128. For example, the success of the Salal Hydroelectric Project exhibited enlightened political direction by both sides. Mehta, *supra* note 119, at 76-77.

129. Kliot et al., *supra* note 115, at 321.

130. The agreement has set the stage for American and World Bank support for even closer cooperation between India, Pakistan, and other nations in the region. Ideas being considered are an Iran-Pakistan-India or a Turkmenistan-Afghanistan-Pakistan-India natural gas pipeline. Jairam Ramesh, *13/12 and the USA*, INDIA TODAY, Dec. 24, 2001, at 53.

131. After the 1996 agreement, there was limited improvement at Calcutta port. *See* GREEN CROSS INT'L, NATIONAL SOVEREIGNTY AND INTERNATIONAL WATERCOURSES 78-79 (2000); B.G. Verghese, *From Dispute to Dialogue to Doing*, in SUSTAINABLE DEVELOPMENT, *supra* note 103, at 177.

132. Nishat, *supra* note 103, at 81.

Ganges during the dry season. The 1977 agreement lasted only five years; it was extended by two side agreements covering the periods 1982-1984 and 1985-1988, respectively.<sup>133</sup>

From 1988 until 1996, the two nations apportioned the flow of the Ganges under the formula laid out in the 1977 agreement.<sup>134</sup> When that agreement finally expired in 1988, India unilaterally siphoned off water flowing into Bangladesh, affecting the thirty-five million people living in the Padma basin.<sup>135</sup> From 1988 to 1996, there was no agreement—a severe irritant in Indian-Bangladeshi foreign relations. In 1996, India and Bangladesh concluded a new agreement on managing the waters of the Ganges. The 1996 treaty set forth a new formula for sharing river flow during the dry season, and developed a seasonal schedule of flow rates. The principal objective of the 1996 Bangladesh-India Treaty is to regulate the amount of water that India releases at the Farakka Barrage along the Ganges over the next thirty years.<sup>136</sup> It also provides that below the Barrage, India may not further reduce the flow except in a limited amount constituting “reasonable use.”<sup>137</sup> The formula equally divides all river flow of 70,000 cubic feet per second (cusecs) between the two nations. If there is a river flow of between 70,000 and 75,000 cusecs, Bangladesh is entitled to receive 35,000 cusecs and India the rest; with a flow of more than 75,000 cusecs, India is entitled to 40,000 cusecs and Bangladesh receives the balance.<sup>138</sup> The Treaty also establishes three ten-day periods for both countries when each will get 35,000 cusecs.<sup>139</sup>

#### Annexure I <sup>140</sup>

Availability at Farakka	Share of India	Share of Bangladesh
70,000 cusecs or less	50%	50%
70,000-75,000 cusecs	Balance of flow	35,000 cusecs
75,000 cusecs or more	40,000 cusecs	Balance of flow

The parties established a Joint Committee that is responsible for implementing the arrangements of the treaty, and for identifying issues to be addressed by the Indo-Bangladesh Joint Rivers Commission.<sup>141</sup>

Like the Indus agreement, the agreement between India and Bangladesh on the sharing of waters at Farakka arose within a political environment of hostility and mutual suspicion. It is thus an ideal candidate for examining

133. Bangladesh-India Agreement on the Sharing of the Ganges' Waters, Nov. 5, 1977, 17 I.L.M. 103 (1978). Two Memoranda of Understanding followed the 1977 agreement, one in 1982 and one in 1985, both of which were short lived.

134. *Id.*

135. *Unneighborly Conduct: How India and Bangladesh Can Patch Up Their Ties*, ASIAWEEK, May 10, 1996, at 24.

136. Bangladesh-India Treaty on Sharing of the Ganges Waters at Farakka, Dec. 12, 1996, arts. I, XII, 36 I.L.M. 519, 523, 526.

137. *Id.* art. III, 36 I.L.M. at 524.

138. *Id.* art. II, Annex 1. Further provision is made if the Ganges' flow falls below 50,000 cusecs. *Id.* art. II(iii).

139. *Id.* art. II, Annex 1.

140. *Id.*

141. *Id.* arts. VI, VII at 525.

whether a treaty alone might work to reduce international tension.<sup>142</sup> One study that compared the level of cooperation across nine international river basins in Africa, Europe, Asia, South America, and the Middle East, ranked the Indus and Ganges basins at the bottom of the list.<sup>143</sup> Nonetheless, the Indus agreement is regarded as a unique and successful bridge between India and Pakistan because they have been unable to cooperate in any other way.

## V. TRANSBOUNDARY RIVER AGREEMENTS AS CBMS

In many areas of the world, water scarcity and conflict may be closely linked to the lack of international cooperation over shared freshwater resources.<sup>144</sup> The strategic geography of the Indus and Ganges basins, much like that of the Jordan, Nile, and Euphrates, tends to promote disputes over water scarcity. In the former two cases, bilateral cooperation on shared transboundary rivers effectively ameliorated the conflict.<sup>145</sup> Agreements resolving transboundary rivers conflicts, however, have utility beyond merely dampening disputes over water scarcity; such agreements have served as confidence and security-building mechanisms more generally. More likely than generating conflict, international rivers have engendered cooperation, flexibility, and interdependence among tribes, ethnic communities, and nations alike. Indeed, learning how to share freshwater resources has more often served as humanity's forum for building community than as a cause of war.<sup>146</sup> While scarce resources always pose a risk of conflict, the history of disparate ethnic groups and nations that live along shared river basins is largely one of cooperation and coexistence.<sup>147</sup> This ancient past fosters optimism for the present, and it is used here as a point of departure for recasting today's complex international river disputes as opportunities for building stability and reducing the likelihood of interstate warfare. Recognizing and capitalizing on this external benefit of transboundary river agreements has great implications for improving regional stability in international river basins.

Because the Indus Treaty and the agreement on the Farakka Barrage do not specify agreement on any lofty principles of international law, some scholars have considered them to have established relatively weak transboundary water institutions.<sup>148</sup> During negotiations, the parties did assert contending theories of right to water based on "prior use," "historical rights," and "equitable use" or "equitable apportionment."<sup>149</sup> These terms of international law prevail on the parties to negotiate by setting out vague

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142. Kliot et al., *supra* note 115, at 322.

143. *Id.* at 321-22. Four river basins—the Senegal, Niger, Colorado, and Rio Grande—had a high degree of commitment to cooperation. The Indus and Ganges Basins featured the least commitment thereto. The Mekon, Danube, and Elbe represented an intermediate category. *Id.* at 309.

144. Kuk & Deese, *supra* note 95, at 57.

145. *Id.* at 39-52.

146. Priscoli, *supra* note 74, at 626.

147. *Id.* at 624.

148. Kliot et al., *supra* note 115, at 322.

149. *Id.*



standards for water apportionment that prompt the parties to negotiate.<sup>150</sup> And because the terms never connote a precise rule, the vague standards continue to generate benefits extending into the future.<sup>151</sup> Although both the Indus and Ganges treaties perhaps made no advances in the law per se, their impact in achieving water resource stability and in reducing pretext for war is not modest.

#### A. *Environmental Causes of War . . . and Peace*

As with the causes of war, there are tremendous methodological problems in identifying the critical element that might bring peace. Periods of war or peace are likely created by both a complex set of variables and an assortment of historical contingencies. It is instructive that the "Correlates of War," an international project at the University of Michigan to explore the conditions associated with the outbreak of war, sought unsuccessfully during four decades to isolate the precise variables or mix of variables that could be identified as the critical causes of warfare.<sup>152</sup> Just as international relations scholars have debated the causes of war without coming to any consensus on the critical factors of causation, those studying international law may be unable to reach agreement on the necessary conditions for peace. The search for variables yielding peace has not been fruitful, causing some scholars to abandon the effort.

Environmental and security literature suggests that many constellations of variables can generate, trigger or amplify violence and insecurity; it is therefore unproductive to seek a single causal model with universal explanatory and predictive power . . . . At the same time, however, there exists today a constellation of interactive variables that, when associated with severe environmental stress, are foreboding.<sup>153</sup>

In attempting to determine the key causes of war, scholars have offered leadership, character, and personality models,<sup>154</sup> nationalism,<sup>155</sup> the role of power politics,<sup>156</sup> deterministic world system models,<sup>157</sup> economic theories of imperialism,<sup>158</sup> and natural aggressive tendencies of human nature.<sup>159</sup> Adding to these traditional theories, many believe that immense environmental

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150. Benvenisti, *supra* note 65, at 402.

151. *Id.* at 402-03.

152. Richard Matthew, *In Defense of Environment and Security Research*, ENVTL. CHANGE & SEC. PROJ. REP., Summer 2002, at 109, 116. Since its inception in 1963, the Correlates of War (COW) Project has produced more than 150 book chapters and scholarly articles and a dozen books. The project is located on the internet at <http://www.umich.edu/~cowproj/index.html> (last visited Apr. 26, 2003).

153. Matthew, *supra* note 152, at 116.

154. See, e.g., JOHN G. STOESENGER, *WHY NATIONS GO TO WAR* (8th ed. 2000).

155. See, e.g., KENNETH N. WALTZ, *MAN, THE STATE AND WAR* 174-79 (1959).

156. See, e.g., HANS J. MORGENTHAU, *POLITICS AMONG NATIONS: THE STRUGGLE FOR POWER AND PEACE* (Kenneth W. Thompson ed., 6th rev'd ed. 1985).

157. See generally, e.g., GEORGE MODELSKI, *LONG CYCLES IN WORLD POLITICS* (1987); *WORLD SYSTEM HISTORY: THE SOCIAL SCIENCE OF LONG-TERM CHANGE* (Robert Allen Denmark et al. eds., 2000).

158. See, e.g., J.A. HOBSON, *IMPERIALISM: A STUDY* (1965); V.I. LENIN, *IMPERIALISM: THE HIGHEST STAGE OF CAPITALISM* (1939).

159. See, e.g., KONRAD LORENZ, *ON AGGRESSION* (Marjorie Kerr Wilson trans., 1966); Peter A. Corning, *The Biological Basis of Behavior and Some Implications for Political Science*, 23 *WORLD POL.* 321, 342-44 (1971).

degradation and resource mismanagement are contributing factors to regional violence and war.<sup>160</sup> In a 1999 pilot study, NATO concluded that environmental stress interacts with political, economic, and social factors to create a higher potential for conflict.<sup>161</sup> Peter H. Gleick of the Pacific Institute for Studies in Development, Environment and Security has built an effective model of freshwater-related conflicts derived from his exhaustive set of data on the contribution of water to international conflict.<sup>162</sup> This seminal effort, which arose at the height of the Cold War in the 1980s, has promoted a new appreciation of the role of water as a critical component of political, military, and strategic thought.<sup>163</sup> Competition over freshwater resources often exacerbates international tension, but nations have been remarkably unlikely to go to war solely over freshwater river competition.<sup>164</sup> It is probably no accident, however, that in the areas of most extreme freshwater scarcity, the drive for water is more often an adjunct to greater geo-strategic and political rivalry, and even war.<sup>165</sup>

There is little question that long-term national security is not possible without stabilizing environmental security.<sup>166</sup> Although international disputes over freshwater resources and river water are unlikely to be the sole cause of war, such conflicts act as a catalyst to undermine regional stability.<sup>167</sup> It is no surprise that some of the more troublesome arcs of conflict throughout the world fall along international watercourses, since that is where large populations coalesce to take advantage of freshwater resources. Water issues between Israel and its neighbors, for example, introduce the dynamic of a scarce resource into an incendiary geopolitical situation that could erupt into

160. See, e.g., Thomas F. Homer-Dixon, *Environmental Scarcities and Violent Conflict: Evidence from the Cases*, INT'L SEC., Summer 1994, at 5, 35-36; Thomas F. Homer-Dixon, *On the Threshold: Environmental Changes as Causes of Acute Conflict*, INT'L SEC., Fall 1991, at 76, 106-13. For electronic versions of both *International Security* articles, along with other research by Homer-Dixon, see [http://www.homerdixon.com/r&sp/frames\\_aca.htm](http://www.homerdixon.com/r&sp/frames_aca.htm) (last visited Apr. 26, 2003).

161. NATO COMM. ON THE CHALLENGES OF MODERN SOC., ENVIRONMENT & SECURITY IN AN INTERNATIONAL CONTEXT: FINAL REPORT 93-108 (Kurt M. Lietzman & Gary D. Vest eds., 1999), <http://www.nato.int/cms/publi/envsec/tech-rep.pdf>. For the Report's graphical depiction thereto, see *id.* at 104.

162. PETER GLEICK, PAC. INST. STUDS. DEV., WATER CONFLICT CHRONOLOGY—INTRODUCTION, at <http://www.worldwater.org/conflictIntro.htm> (last modified Sept. 23, 2000).

163. Peter H. Gleick, *Foreword* to PAC. INST. STUDS. DEV., FIFTEENTH ANNIVERSARY REPORT: 1987-2002, at i (2003) (on file with author).

164. ELHANCE, *supra* note 73, at 231-32.

165. One of the most useful and perhaps the most exhaustive catalog for such agreements is the Transboundary Freshwater Dispute Database, a project of the Department of Geosciences at Oregon State University in collaboration with the U.S. Institute of Peace, the World Bank, the University of Alabama, and other individuals and institutions. The database, which references 3,600 water-related treaties dating back to the Ninth Century, contains over 150 full-text transboundary freshwater treaties and detailed negotiating notes on fourteen case studies, and may be accessed through the internet at <http://terra.geo.orst.edu/users/tfdd/index.html>.

166. See, e.g., Lothar Brock, *Security Through Defending the Environment: An Illusion*, in NEW AGENDAS FOR PEACE RESEARCH: CONFLICT AND SECURITY REEXAMINED 79 (Elise Boulding ed., 1992); Bruce Byers, *Ecoregions, State Sovereignty and Conflict*, 22 BULL. PEACE PROPOSALS, Mar. 1991, at 65; Robert D. Kaplan, *The Coming Anarchy*, ATL. MONTHLY, Feb. 1994, at 44, 58-59.

167. This is particularly true in the case of Southwest Asia. See PETER GIZEWSKI & THOMAS HOMER-DIXON, PROJ. ON ENV'T, POPULATION, AND SEC., OCCASIONAL PAPER: ENVIRONMENTAL SCARCITY AND VIOLENT CONFLICT: THE CASE OF PAKISTAN (1996), <http://www.library.utoronto.ca/pcs/eps/pakistan/pak1.htm>.

war.<sup>168</sup> Most scholars accept that South Asian politics are analogous.<sup>169</sup> Conflict over sharing scarce freshwater resources on the subcontinent, especially river irrigation and water works, widens the potential for violence between India and Pakistan.<sup>170</sup>

### B. *Confidence Building on the Indus and the Ganges*

International river basins present a ripe opportunity to negotiate and institute mechanisms that reduce tension and help to prevent war. Viewing international river agreements through this lens, and applying it to the geopolitics of South Asia, yields some interesting and perhaps unexpected findings. This approach to preventing conflict and obtaining consensus on transboundary rivers turns conventional wisdom on its head. The accepted model for approaching transboundary river disputes suggests that success in resolving such disputes is impossible until underlying geostrategic questions are resolved. As one proponent of the convention position argues:

The sine qua non of resolving transboundary water dispute in a protracted conflict setting is the prior resolution of the potential conflict. The history of water disputes in the Jordan River basin and in the Indus basin (between India and Pakistan)—both of which have been deeply intertwined with a protracted political conflict—instructs us that states involved in “high politics” conflicts that provoke wars and engage visceral issues of territorial sovereignty and the recognition of identities, are not inclined to collaborate in seemingly technical matters that concern economic development and human welfare.<sup>171</sup>

Although this view may seem persuasive, there is value in introducing and exploring a fresh approach to reducing the risk of violent conflict—which is so devastating to the citizens, the economy, and the environment of the affected nations. Dramatic breakthroughs in negotiating international river basins, while welcome, are not necessary to bring two parties closer. Even in cases in which riparians merely agree to share information and exchange data, (i.e., concluding assurance and verification agreements), while agreeing to disagree on substantive issues, increased confidence emerges. The transparency generated is not ephemeral; it tends to spread to other aspects of the relationship. The implementation of even modest agreements serves to diminish recalcitrance on both sides. This is the same model of confidence building that was successfully pursued by the superpowers during nearly five decades of the Cold War. It is interesting, then, that some scholars and practitioners would view agreements that merely build confidence but do not resolve pressing substantive issues as the “junk food” of international

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168. See, e.g., Mohammed Zaatari, *Israel Threat Won't Stop Wazzani Project; Berri Vos to Keep 'Liberating' Waters and Land Alike*, DAILY STAR (Beirut), Sept. 5, 2002, transcribed in Foreign Broadcast Information Service, Dec. 10: GMP 20020805000045 (on file with author) (quoting Israeli officials as saying that Lebanon's pumping of water from springs which feed the Hasbani River could spark war).

169. See, e.g., Benvenisti, *supra* note 65, at 396.

170. See generally K.M. De Silva, *Conflict Resolution in South Asia*, 1 INT'L J. GROUP RTS. 247 (1994).

171. Miriam R. Lowi, *Political and Institutional Responses to Transboundary Water Disputes in the Middle East*, ENVTL. CHANGE & SEC. PROJECT REP., Spring 1996, at 6.

agreements.<sup>172</sup> The less apparent and evolving benefits of building confidence may not make good news copy, but they can unceremoniously promote peace on the ground.

If one accepts, as I do, the findings of research compiled by the Transboundary Freshwater Dispute Database at Oregon State University that the presence of general animosity among riparians is more closely linked to water conflict than other factors,<sup>173</sup> then the case for viewing transboundary river agreements as CBMs within a greater geopolitical context is especially compelling. In the case of India, Pakistan, and Bangladesh, the introduction and management of transboundary river agreements has successfully served to build confidence and dampen military and political animosity between the states. This model appears to offer benefits that might be reflected in other river agreements in South Asia, and is likely a phenomenon in South America, Asia, and Africa as well.<sup>174</sup>

The role of transboundary river agreements in promoting sustainable development extends beyond simple economic and environmental factors. In South Asia, agreements have helped to strengthen political ties. The agreements have value as vehicles to ameliorate tension and reduce the likelihood of war. Although freshwater rivers, especially transnational ones, are frequently understood to contribute to international conflict, in South Asia the process and results of concluding transboundary river agreements have had a positive ripple effect on the regional security environment. South Asian diplomacy has been broadened through international river agreements by inserting new ingredients into the geopolitical disputes in the following ways:

- (1) Assurance—the provision of information by states to other state actors throughout the river basin;
- (2) Verification—introducing both internal and external monitoring mechanisms by state actors;
- (3) Institution-building—building up capacities for sub-state, non-state, and state actors throughout the basin;
- (4) Process-building—developing new machinery for negotiations by state and sub-state actors;
- (5) Constituent-building—broadening the number and types of participants—by sub-state, non-state, and state actors throughout the basin; and,
- (6) Principle development—introducing normative models into the conflicts of riparian nations by sharing principles derived from the rule of law, equitable use, notification, and prevention of harm.

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172. Joseph S. Nye, Jr., *Arms Control After the Cold War*, FOREIGN AFF., Winter 1989/1990, at 42, 42-46.

173. See *supra* note 165.

174. Europe and North America have a predominance of democratic states, which liberal theorists correlate to greater international peace and stability. See, e.g., BRUCE RUSSETT, GRASPING THE DEMOCRATIC PEACE: PRINCIPLES FOR A POST-COLD WAR WORLD (1994). Moreover, their international water agreements are, for the most part, more developed and have a longer history of success, while the security environment is more stable and less threatening than on some other continents.

This model supports the intuition of the International Institute of Sustainable Development (IISD) and the World Conservation Union (IUCN), based on field research in Pakistan and elsewhere, that “just as environmental change can contribute to conflict, conservation measures may contribute to peace.”<sup>175</sup> In recognizing the link, however, the IISD-IUCN acknowledge that the connection between conservation and peace is “perhaps even more difficult to demonstrate than the familiar environment-conflict link,” and argue that trying to prove that aggressive conservation practices would inevitably reduce conflict is “impossible.”<sup>176</sup> In their study of northern Pakistan, their argument is an appeal to reason:

In the case of northern Pakistan, where relatively scarce resources are being overwhelmed by population growth and unsustainable practices, it does not seem to us implausible that the sustainable use of natural resources and the protection of vital ecosystems would make it much easier to create or preserve robust livelihoods, thereby reducing a prominent source of violence and tension.<sup>177</sup>

Relations between India and Pakistan have been cause for alarm for five decades, most recently during the “nuclear crises” of the spring of 2002.<sup>178</sup> One month after an attack on the Parliament of India in December 2001 by five Pakistani terrorists, the former Indian high commissioner to Pakistan, G. Parthasarathy, expressed popular Indian opinion that New Delhi should abrogate the Indus Waters Treaty, saying “We should make it clear to Pakistan that if it can bleed us in Jammu and Kashmir, we have the capability to starve them.”<sup>179</sup> While the military and diplomatic officials of the two nations traded threats throughout the spring of 2002, there was a sense of relief among region analysts when the annually scheduled meeting of the Permanent Indus Commission was not cancelled.<sup>180</sup> At the time, the meeting was the only high-level official contact between the two governments. There was intense pressure from hardliners in India for New Delhi to abrogate the Indus Waters Treaty, which would be seen by Pakistan as a threat to cut off water at some point in the future. Many in India went even further, arguing not only that the meeting should be skipped, but that India should abrogate the treaty altogether.<sup>181</sup> Instead, India conducted the commission meetings

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175. Matthew & Zaidi, *supra* note 2, at 62-63.

176. *Id.* at 63.

177. *Id.*

178. U.S. diplomacy was engaged to “decrease the tension” between the two nuclear-armed regional powers. Luke Harding & Richard Norton Taylor, *India Alert as Nuclear War Looms*, *GUARDIAN*, June 1, 2002, at P1, 2002 WL 21962134; Shanker, *supra* note 69, at A5.

179. Shishir Gupta, *India's Response: Soft Options Now, Hard Battles Later*, *INDIA TODAY*, Jan. 14, 2002, at 42. The threat refers to the belief of one analyst that “the destruction of just seven dams and barrages in Pakistan even by conventional weapons would lead to the ‘total disruption of control over irrigation in the Indus Valley,’ and by implication, the destruction of the most important parts of the Pakistani state.” *TELLIS*, *supra* note 87, at 51-52 & nn.104-05 (citing VIJAI K. NAIR, *NUCLEAR INDIA* 137, 141 (1992)). Hydrologists in Pakistan warned that a repudiation of the treaty by India would result in widespread famine. Fred Pearce, *India Could Suck Pakistan Dry*, *NEW SCIENTIST*, May 18, 2002, at 18.

180. Jyotsna Singh, *Water Treaty Withstands Wars*, *BBC NEWS*, May 30, 2002, [http://news.bbc.co.uk/2/hi/south\\_asia/2017059.stm](http://news.bbc.co.uk/2/hi/south_asia/2017059.stm).

181. *Id.*

because it wanted to “show the world that it is behaving responsibly.”<sup>182</sup> Fulfilling its obligations under the Indus Water Treaty was a subtle but effective vehicle for India, the upper riparian, to maintain diplomatic high ground relative to Pakistan amid intense tensions over terrorists operating from Kashmir. The completion of the Indus Waters Treaty has influenced Indian-Nepalese relations as well, because the success of the Indus agreement led to the resolution of a river dispute with Nepal over the River Mahkali in 1997.<sup>183</sup>

Article VI of the Treaty makes extensive use of a detailed verification regime.<sup>184</sup> Both states are required to regularly exchange “daily gauge and discharge data relating to the flow of the rivers,” daily reservoir extractions or releases, and daily withdrawals and escapages from all canals.<sup>185</sup> These data may be requested by the other party as frequently as on a daily basis, if available.<sup>186</sup> In setting up a Permanent Indus Commission, the two nations created a stable office through which this data may be submitted and received.<sup>187</sup> The Commission is comprised of a permanent Commissioner for Indus Waters from each state. It meets once a year, alternating meeting locations between India and Pakistan.<sup>188</sup> The Commissioners are not low-level technical functionaries; although normally from an engineering background, they hold an influential office accorded diplomatic immunity by the other state.<sup>189</sup>

The Commissioners, accompanied by a limited staff, may take an extensive tour of the rivers every five years. They are also required to host ad hoc tours of works or sites promptly upon request from the Commissioner of the other state. Adopting this unscheduled on-site monitoring option in early 2003, India permitted Pakistani engineers to inspect a 450-megawatt hydroelectric dam located at the village of Baglihar on the Chenab River.<sup>190</sup> This dam was of particular concern to Pakistani leaders since Pakistan is entitled to the entire natural flow of the river under the 1960 agreement. By employing a classic scheduled and ad hoc verification regime, India and Pakistan have made their activities more transparent. In the case of the Baglihar works on the Chenab, the parties still do not agree,<sup>191</sup> but Pakistan has at least had the opportunity to examine the facilities on-site. By utilizing both assurance and verification, the parties deal directly with the greatest cause of suspicion and distrust—a lack of information. Moreover, by coupling verification with assurance, the states are bound to the machinery and routine of information sharing.

182. *Id.*

183. Sanjoy Hazarika, *South Asia: Sharing the Giants; Water Sharing of the Indus, Ganges and Brahmaputra Rivers*, UNESCO COURIER, Oct. 1, 2001, at 32-33.

184. Indus Waters Treaty, Sept. 19, 1960, art. VI, India-Pak., 419 U.N.T.S. 125.

185. *Id.*

186. *Id.*

187. *Id.* art. VIII.

188. *Id.*

189. *Id.*

190. *India-Pak Agree to Resolve Water Issue*, INDIA TIMES, Feb. 6, 2003, <http://timesofindia.indiatimes.com>.

191. Khaleeq Kiani, *Pakistan Demands Inspection of Baglihar Power Project*, DAWN, Feb. 5, 2003, available at <http://www.dawn.com/2003/02/05/top4.htm> (last visited Apr. 26, 2003).

In February 1999, the two nations ventured to expand their relations by entering into the Lahore Declaration to enhance peace and security in the region. The Lahore initiative was launched when Indian Prime Minister Vajpayee visited Pakistan and the two states signed an agreement that pledged bilateral consultations on security concepts and nuclear doctrines, with a view toward developing confidence building in both the nuclear field and conventional fields aimed at conflict avoidance.<sup>192</sup> Only two months after the Lahore Declaration, however, the spirit of cooperation was ruined by conflict in the Kargil area of Jammu and Kashmir. The next step is to convert the memorandum of understanding into a verifiable CBM on nuclear and missile management.

Turning from India and Pakistan, we next examine the confidence building effects of the Ganges Treaty. For Bangladesh and India, the animosity is less, and the advantages gained by the Ganges Treaty have transformed the relations between the two nations.

Water is the key to economic development and bilateral cooperation between India and Bangladesh.<sup>193</sup> Deep mutual suspicion drives Bangladesh's foreign relations with India regarding water, so the issue of international freshwater on the subcontinent has historically tended to aggravate, rather than soothe, ethnic and nationalist ire.<sup>194</sup>

Like the Indus treaty, the Ganges agreement has served to dampen geopolitical tensions by offering a framework and forum for basin-related issues between India and Bangladesh concerning shared river resources.<sup>195</sup> Importantly, Bangladesh, which has tended to view India as striving for hegemony, has successfully implemented an international river agreement with India that injects a sense of fairness and equality into the diplomacy between a smaller state and New Delhi. The agreement is credited with transforming the relationship between the two countries:

Prior to [the] accord, Bangladesh had felt politically unable to meaningfully discuss and conclude agreements with India pertaining to any river other than the Ganges, let alone matters unrelated to water resources such as transit and wider economic cooperation, until the Farakka issue was first settled or clearly on the way to settlement. . . . The Ganges treaty has now unlocked all doors.<sup>196</sup>

In welcoming the Prime Minister of Bangladesh to India for the signing of the treaty, the External Affairs Minister declared that the treaty heralded a "new relationship" between the two nations concerning security, trade, and other areas.<sup>197</sup> The "entirely new phase of cooperation" was ushered in with immediate pledges on a range of subjects, including the extension of one billion rupees worth of commercial credits to expand trade between the two

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192. See The Lahore Declaration, Feb. 21, 1999, [http://www.indianembassy.org/South\\_Asia/Pakistan/lahoredeclaration.html](http://www.indianembassy.org/South_Asia/Pakistan/lahoredeclaration.html).

193. Jairam Ramesh, *Water is the Key*, INDIA TODAY, Apr. 10, 2000, at 39.

194. *Id.*

195. Surya P. Subedi, *Hydro-Diplomacy in South Asia: The Conclusion of the Mahakali and Ganges River Treaties*, 93 AM. J. INT'L L. 953, 953-54 (1999).

196. Verghese, *supra* note 131, at 172.

197. Statement by Shri I.K. Gujral, External Affairs Minister in the Rajya Sabha (Dec. 12, 1996), [http://www.indianembassy.org/policy/Foreign\\_Policy/ganga.htm](http://www.indianembassy.org/policy/Foreign_Policy/ganga.htm).

nations.<sup>198</sup> An Indian Embassy report on foreign relations for 1997-1998 also credited the landmark treaty with "greatly enhancing" relations between India and Bangladesh, including its leading to a follow-on visit to Bangladesh by the Indian Prime Minister in January 1997 to consolidate the new relationship.<sup>199</sup> Bangladesh also saw the treaty as the start of a new relationship, viewing Indian substantive compliance as the primary metric for whether the agreement can build confidence between the two rivals.<sup>200</sup> By scrupulously adhering to the treaty, and by delivering water according to the annex schedules set forth in the treaty during the dry season, India adds confidence building to the "benefit multiple."

By setting out a schedule of river flows, the Ganges Treaty provides assurance to the weaker power that equitable division of the river is the target. Verification, by introducing both internal and external monitoring mechanisms by state actors, is embedded in the agreement as well. The parties also commit to be guided by "the principles of equity, fairness and no harm to either party" in their efforts to conclude water-sharing agreements with regard to the fifty-five other rivers shared by the two states.<sup>201</sup> Such principles, the hallmark of CBMs, tie each state to the same objectives, forcing them to develop their positions within the confines of the agreed lexicon. Moreover, the "mutual accommodation" called for in the treaty successfully elevates the thinking on both sides from the technical to the political.<sup>202</sup> Tightening and strengthening cooperation for managing these additional tributaries may have a normalizing effect on the language of diplomacy in the region by exercising and operationalizing a mutual terminology.

### C. *Are Transboundary River Agreements Effective?*

In the case of the Indus and the Ganges, procedural discussions were extensive despite the lack of agreement on substantive issues. While substantive concerns such as water quality, water scarcity, and river flow rates remain unresolved, procedural discussions addressed regularizing state practice and preventing surprise regarding damming and flow rates, introducing jointly sponsored programs to implement sustainable fishing and hunting practices, installing realistic environmental discharge controls and measures, and observing river traffic and non-navigational usage. This approach borrows from the "institutionalist" school of international relations theory,<sup>203</sup> and was first identified as key to tempering transboundary river disputes by Eyal Benvenisti:

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198. *Id.*

199. See Embassy of India, India's Neighbors, available at [http://www.indianembassy.org/policy/Foreign\\_Policy/sasia.htm](http://www.indianembassy.org/policy/Foreign_Policy/sasia.htm) (last visited Apr. 26, 2003).

200. A.T.M. Shamsul Huda, *Constraints and Opportunities for Cooperation Towards Development of Water Resources in the Ganges Basin*, in SUSTAINABLE DEVELOPMENT, *supra* note 103, at 46, 54.

201. Bangladesh-India Treaty on Sharing of the Ganges Waters at Farakka, Dec. 12, 1996, art. IX, 36 I.L.M. 519, 526; see also Nishat, *supra* note 103, at 91; Ramesh, *supra* note 193, at 39.

202. Verghese, *supra* note 131, at 171.

203. Institutionalists generally accept the assumptions of Realists that states exist in an anarchic international system, but rather than dismissing international cooperation, they focus on the functional benefits of rules and institutions. ROBERT J. BECK ET AL., INTERNATIONAL RULES: APPROACHES FROM



[The] effectiveness [of transboundary river agreements] lies in the establishment of frameworks for the exchange of information, mutual monitoring and frequent interactions. A forum that intensifies interaction, increases the number of exchanges, and reduces the intervals between them can develop stable mutual expectations regarding future behavior and reduce both bargaining costs and uncertainty about the value of proposed transactions.<sup>204</sup>

Great progress may be made just by accepting the collateral benefit of non-binding agreements regarding river management. This very modest but often more achievable success then begins to lay institutional groundwork that gently and slowly helps to ease geopolitical turmoil. Rather than permitting distrust and suspicion over river resources to fuel geo-strategic conflict, transboundary river agreements fashion competition into workable solutions by factoring out uncertainty, surprise, and suspicion. Confidence building mechanisms among the parties can, over time, influence the parties to negotiate and implement a common river agreement project that builds security through mutual benefit.

Any type of agreement can build confidence among rivals if it serves to build common ground. This certainly does not mean that such an agreement will prevent war, but it often represents a respite from conflict with respect to one of myriad issues at stake. CBMs cordon off limited areas of agreement, thereby encouraging parties in conflict to search for areas of commonality. For example, during 2000 and 2001, when the Taliban and the Northern Alliance were at the height of their war for control of Afghanistan, virtually the only issue the two groups shared in common involved the creation of an Afghanistan Museum in Switzerland.<sup>205</sup> Still, the pettiness exhibited by both parties over even such a noncontroversial goal highlights one of the foremost difficulties of CBMs—that they seek to pacify “the dog that didn’t bark.”<sup>206</sup> While full-fledged wars tend to attract extensive media coverage and draw in outside parties to assist in stopping the conflicts, tensions surrounding transboundary river disputes often simmer for decades, little noticed by the world at large. Without the eruption of a major conflict to capture media attention and third-party intervention, parties to transboundary river conflict have less incentive to reach agreements.

It is impossible to measure empirically the effectiveness of river agreements as CBMs, just as it is impossible to attribute empirically the success of the CBMs that were a feature of the Cold War arms control apparatus solely to the absence of major war between the United States and the Soviet Union. Nonetheless, examination of the experiences of the Indus and Ganges agreements suggests that introducing a level of transparency and

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INTERNATIONAL LAW AND INTERNATIONAL RELATIONS 166 (1996). One pioneer of the institutionalist approach is Kenneth Abbott, who focused on the role of “assurance” and “verification” in major arms control agreements. Abbott, *supra* note 35, at 4; see also Anne-Marie Slaughter et al., *International Law and International Relations Theory: A New Generation of Interdisciplinary Scholarship*, 92 AM. J. INT’L L. 367, 379-81, 391-93 (1998). For a critical view of institutionalist theory, see John J. Mearsheimer, *The False Promise of International Institutions*, INT’L SEC., Winter 1994/95, at 5, 8.

204. Benvenisti, *supra* note 65, at 412.

205. Kristen M. Romey, *The Race To Save Afghan Culture*, ARCHEOLOGY, May/June 2002, at 18, 20.

206. Sucharipa-Behrmann & Franck, *supra* note 15, at 497.

confidence into geostrategic resource competition strengthens regional security. CBMs unleash a cascading advantage in which the creation of one CBM, or a modest series of CBMs, leads to an ever-expanding circle of issues that are legitimate for bilateral discussion. The agreements generate confidence between gropolitcal rivals by expanding their political relationship. The spillover benefits of transboundary water management have been most noticeable in the realm of economic development; there are security benefits as well. International, bilateral, or multilateral cooperation is a prerequisite for developing conditions for the spillover of benefits:

[T]he joint development of transboundary river resources can act as a catalyst for regional economic cooperation in sectors other than water, as is seen in the potential development of the Nile Basin. . . . This is as a result of a variety of factors, not least of which is the 'knock on' effect of the trust and cooperation which has to be built between countries in order to reach agreement on the management of a common resource.<sup>207</sup>

The Indus and Ganges agreements require active support and long-term commitment from both nations' top-level political leadership; they both are dependent upon the mobilization of scientific and technical expertise; and each requires domestic governmental structures that are capable of effective bilateral and multilateral cooperation and collaboration.<sup>208</sup> This pattern was observed after the conclusion of the Indus Treaty, which nourished other bilateral talks, including two near-breakthroughs to resolve the volatile Siachen Glacier issue. The 1998 Indian proposal called for bilateral monitoring and the establishment of a hotline between divisional commanders, as well as assurances to authenticate existing troop positions.<sup>209</sup> Unfortunately, an agreement to end the war was spoiled at the last minute by political pusillanimity on both sides.<sup>210</sup>

Evidence of the efficacy of transboundary river agreements as CBMs is largely anecdotal. The agreements in South Asia have contributed to the transparency of India's intentions and actions for the states surrounding India, reducing the long-held suspicions that these states have toward New Delhi. At the same time, India has benefited from assurances from the other nations, particularly Nepal and Bangladesh, which New Delhi fears may be able to effectively leverage their geographic advantage as an upper riparian against India by interrupting river water flow.

The agreements build constituencies by broadening the numbers and types of participants throughout the basin, including governments and non-governmental organizations. The negotiations tend to include an array of

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207. LEN ABRAMS, WORLD COMM'N ON DAMS, CONTRIBUTING PAPER: DAMS IN THE CONTEXT OF TRANSBOUNDARY/INTERNATIONAL WATERS 1, 1 (2000), <http://www.damsreport.org/docs/kbase/contrib/ins224.pdf>.

208. Kliot et al., *supra* note 115, at 308.

209. The Siachen Glacier, nestled between the Karakoram and Saltora mountain ranges in Kashmir, is seventy-six kilometers long and two-to-eight-kilometers wide. Since 1984 when India launched Operation Meghdoot to bring most of the area under Indian control, the two nations have engaged in ongoing artillery duels and skirmishes high in the ice. D. Suba Chandran, *Delhi Round of Indo-Pak Talks—I Siachen*, INST. PEACE & CONF. STUD., Nov. 18, 1998 (on file with author). For the view of a journalist who spent eight weeks living at Indian and Pakistani army outposts located on the glacier, see Kevin Fedarko, *The Coldest War*, OUTSIDE, Feb. 2003, at 38, 98-99.

210. Ramesh, *supra* note 130.

scientific, technical, environmental, ecological, legal, administrative, economic, and military interests. The involvement of all of these interests has a progressive effect, helping to build an integrated approach to civil government and foreign relations.<sup>211</sup> Bringing together a network of mid-level regulators, resource and economic officials, educators, scientists, diplomats, and military officers develops a dense web of relationships across the border. This notion of liberal theory analyzes state behavior “primarily as a function of the constraints placed on state actors by being embedded in domestic and transnational civil society.”<sup>212</sup> These relationships constitute a new bureaucratic transgovernmental order, a phenomenon Professor Anne-Marie Slaughter has termed the “Real New World Order.”<sup>213</sup> Within the paradigm of the “Real New World Order,” ad hoc transgovernmental networks help to create a new world order ideal by closely integrating states and by expanding cooperation among government officials, non-governmental organizations, and regional actors at all levels. While serving to construct a “new” South Asian order of civil relationships, the Indus and Ganges agreements continue to spin off substantive economic, environmental, and security benefits that promote sustainable development. These agreements have influenced India, despite its vantage of political and military strength, to deal with its neighbors largely on the basis of equality. New Delhi, situated both in the enviable position of upstream riparian as well as lower riparian, has had to simultaneously implement agreements from both perspectives. In doing so, it has reduced regional suspicion and avoided inflaming regional insecurities. These findings comport with the methods of a United Nations University (UNU) workshop to exploit unconventional advantages within the existing system as a strategy to prevent conflict. The UNU workshop concluded that “mainstreaming means working with—and within—existing instruments and mechanisms.”<sup>214</sup> Conflict prevention strategies must also be developed, such that “[p]reventive thinking is incorporated into existing structures, institutions, processes—into the daily work of states, nonstate actors and intergovernmental organizations.”

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211. Any help in assisting non-democratic states move toward democracy is counted as a benefit toward realizing world peace. Democracies rarely, if ever, wage war against one another. See, e.g., RUSSETT, *supra* note 174, at 4 (1994) (“[A] striking fact about the world comes to bear on any discussion of the future of international relations: in the modern international system, democracies have almost never fought each other.”). This “democratic peace proposition” is borne out by empirical research by Professor Rudolph Rummel of the University of Hawaii. See RUDOLPH RUMMEL, *POWER KILLS: DEMOCRACY AS A METHOD OF NONVIOLENCE* (1997). Professor Rummel’s convincing case for democracy as a mechanism for preventing major war is set forth in detail on his website at <http://www.hawaii.edu/powerkills> (last site revision Feb. 23, 2003).

212. Anne-Marie Slaughter Burley, *International Law and International Relations Theory: A Dual Agenda*, 87 AM. J. INT’L L. 205, 227 (1993); see also *id.* at 228 (“All governments represent some element of domestic society, whose interests are reflected in state policy.”).

213. See generally Anne-Marie Slaughter, *The Real New World Order*, FOREIGN AFF. Sept./Oct. 1997, at 183.

214. DAVID CARMENT & ALBRECHT SCHNABEL, *BUILDING CONFLICT PREVENTION CAPACITY: METHODS, EXPERIENCES, NEEDS* 18 (U.N.U. Workshop Seminar Series Report, Feb. 2001), <http://www.unu.edu/p&g/conflict/cp-capacity.pdf>. The purpose of the workshop was to develop and implement conflict prevention training tools for regional and international organizations.

## VI. CONCLUSION

Despite the inhospitable hydro-political climate, India signed the Indus Waters Treaty with Pakistan in 1960 and the Ganges Treaty with Bangladesh in 1996. These two agreements have established a framework through which much has been—and will be—accomplished. The value of these two agreements extends largely from their procedural compliance, institution building, and the introduction of assurance and verification into the relations between the regional hegemon and her neighbors. For Bangladesh, substantive compliance by India is the key to maintaining good relations between Dhaka and New Delhi. From the standpoint of resource and environmental cooperation, there is a vast arena of cooperation that still remains to be opened among these states.

Although achieving international agreement on transboundary river access and resources can be difficult—typically pitting upper and lower riparians against one another—drafting and implementing transboundary river agreements has been less difficult than obtaining a comprehensive regional peace agreement. Viewed as a confidence and security building measure within the greater strategic context, international river agreements serve as an effective component of the overall regional security framework to reduce tension and prevent war. River agreements may or may not resolve the complex structural economic and resource problems that aggravate tensions along international rivers. Regardless, in South Asia they serve as an important component of state-to-state civil government relations.

The transboundary river agreements for the Indus and Ganges Rivers fill a role in developing bilateral institutions on the subcontinent that would otherwise remain unmet. The South Asian Association for Regional Cooperation (SAARC), for example, was established in the 1980s to provide a forum for discussion on trade. Contentious topics like transboundary water resources were totally excluded from its purview.<sup>215</sup> In this sense, the river agreements on the subcontinent have a well-established history of helping to peel back contributing causes of conflict by promoting cooperation through civil society and pluralistic government. Negotiating international river agreements tends to involve scientific, environmental, and community groups as well as regime elites within the basin nations, which promotes democratization peacefully over time. Democratic and democratizing states, in turn, are more likely to fuel greater regional cooperation.<sup>216</sup> The agreements build confidence and enhance international security by creating effective regional civil government cooperation, developing governing mechanisms, building and extending a history of negotiation, sharing resource management, and extending communication and planning between rivals.

Instead of waiting for an overall political breakthrough on issues of “high politics” prior to attempting progress on transboundary river issues, the same procedural mechanisms that are employed in fashioning river agreements provide one element of a foundation on which to build strategic

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215. Hazarika, *supra* note 183, at 32.

216. John Norton Moore, *Toward a New Paradigm: Enhanced Effectiveness in United Nations Peacekeeping, Collective Security and War Avoidance*, 37 VA. J. INT'L L. 811, 823-25 (1997).

stability. The concept of integrating transboundary river agreements as one element of an overall peace process in regional conflict fuses the issue of freshwater management to the greater security question. This paradigm, which has not been widely implemented, views transboundary water agreements as one component of a more stable regional security framework, rather than as a center-stage environmental treaty. The environmental benefits are tertiary to the geopolitical benefits.

This approach introduces a new tool for addressing persistent regional conflict in South Asia—and potential conflicts elsewhere—by applying a time-tested formula that has been effectively employed by the superpowers and the United Nations. Regional conflicts often appear to be intractable, with final resolution a distant and elusive goal. During the superpower rivalry, successful work and developing success on CBMs ameliorated suspicion and helped to prevent the spiral toward readiness and mobilization that often precedes war. Similarly, negotiating and implementing transboundary river agreements in South Asia has served the same purpose. In each case, agreements that were more technical and lacking the political charge of political and military settlements made progress on resolving issues in a civil forum governed by the rule of law. International river agreements in South Asia create fertile ground for further development, while forestalling and even reversing water resource damage on the subcontinent. By focusing on river management as a collateral issue to the underlying conflict, the nations of South Asia can achieve realistic cooperation on the underlying environmental and economic development issues while building overall confidence.

Transboundary river agreements have served as a launching platform for rivals to begin thinking about constructing confidence building measures into other areas of their existing relationship—including, eventually, the military sphere. It is important to recall that in achieving the Indus Waters Treaty, India and Pakistan were edged toward agreement by considerable diplomatic influence of the United States and the World Bank. Agreement was reached only after eight years of negotiation. The United States, and other nations and international organizations, can build on this history by encouraging the two nuclear-armed states to go beyond their existing CBM transboundary river regime and to enter into discussions that involve conventional and nuclear military forces.<sup>217</sup>

The strongest riparian state often takes unilateral action to control the international river basin. This has been the case with India, as with Brazil, Egypt, and Israel, in their respective basins. In each case, the strongest power prefers to deal with its neighbors on a bilateral—rather than multilateral—basis.<sup>218</sup> Water scarcity is driving new models of national security, however, that include interdependency. Interdependence through water sharing and

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217. India is already speaking the vocabulary of confidence building in relation to its nuclear systems. The "August 17, 1999 Draft Nuclear Doctrine" envisions both assurance and verification, and seeks the creation of nuclear risk reduction centers and other confidence building measures with Pakistan. The doctrine is reproduced by the Arms Control Association and is available at [http://www.armscontrol.org/act/1999\\_07-08/ffja99.asp](http://www.armscontrol.org/act/1999_07-08/ffja99.asp). See also Jairam Ramesh, *India and Pakistan Will Come Together Only with U.S. Prodding*, *INDIA TODAY*, Dec. 24, 2001, at 53.

218. ELHANCE, *supra* note 73, at 121.

infrastructure networks increases the flexibility and capacity of states throughout the basin to better respond to exigencies of nature such as flood and drought.<sup>219</sup> This process of reducing uncertainty and building predictability is a hallmark of classic CBMs, and is what makes transboundary rivers effective confidence building measures. Throughout the process of reaching transboundary river agreements, there is some temptation to build an ever more comprehensive and ambitious agreement by continually pushing the parties beyond their comfort zone. Although this temptation is understandable as an effort to both push and pull parties together, it is counterproductive. The pursuit of transboundary river agreements to build confidence is not as immediately gratifying as a comprehensive military agreement. The challenge, then, is to obtain as much in an agreement as possible, without insisting on a comprehensive (but unrealistic) basin plan that addresses each source of contention. A comprehensive plan should not be pursued at the expense of a more easily obtainable but limited design. The history of CBMs is that they tend to beget more sophisticated and more inclusive CBMs. The immediate need in most areas of potential conflict is to first lay the foundation of agreement by building entry-level confidence among the parties. From that foundation, more comprehensive agreements can obtain.

More non-governmental organizations are realizing that water is better viewed not as a problem to be solved among hostile co-riparians, but as an opportunity to enlarge basin relationships.<sup>220</sup> The Stockholm International Water Institute has begun thinking of approaching water conflicts from a position of "hydrosolidarity."<sup>221</sup> Water resources in international river basins serve as a source of contact between people for social and economic cooperation and development, and as a source of building mechanisms for peace and regional stability.

These relationships begin to create a realistic sense of genuine confidence among the parties. Transparency generates grounds for true confidence: "Facing a potentially hostile enemy, what one wants is not to be confident, but to be as confident as the true state of affairs justifies. What one wants is grounds for confidence, or evidence that confidence is justified."<sup>222</sup> Transparency opens circuits that certify veracity and verify compliance between the underlying regime and related governments.<sup>223</sup> Without the drama associated with arms reduction agreements, CBMs have quietly but profoundly reduced international tension and strengthened bilateral and

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219. Priscoli, *supra* note 74, at 627.

220. International Round Table: Transboundary Water Management (Sept. 27-30, 1998), <http://www.thewaterpage.com/berlinrecom.htm>. The so-called "Berlin Recommendations" emerged from the International Round Table at Villa Borsig, Berlin, which was a collaborative effort of the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety; the German Federal Ministry of Economic Cooperation and Development; the German Federal Foreign Office (AA); the World Bank; and the Development Policy Forum of the German Foundation for International Development. The Round Table provided a forum for selected representatives of international lake and river commissions to identify measures that could better support their work.

221. MALIN FALKENMARK, STOCKHOLM INT'L WATER INST., WATER SECURITY FOR MULTINATIONAL WATER SYSTEMS (2001) (on file with author).

222. Thomas C. Schelling, *Confidence in Crises*, INT'L SEC., Spring 1984, at 56.

223. Holst, *supra* note 11, at 5.

multilateral confidence among superpowers and regional rivals alike. Thus, the migration of CBMs into the realm of transboundary river disputes recasts old resource conflicts with new tools, and in doing so begins to transform regional security politics. The agreements may do no more than strengthen the capability of societies to deal with their disagreements through consultative mechanisms and in a peaceful manner.<sup>224</sup> That may very well be accomplishment enough.

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224. Schmieg, *supra* note 96, at 11.

